

PLASTICS & MOLDED PRODUCTS

Reg. U. S. Pat. Off.

Volume 6

NOVEMBER 1930

Number 11

❖ Contents ❖

| | |
|--|-----|
| MOLDED BEETLEWARE PLEASES THE RETAIL PURCHASER..... | 629 |
| THREE NEW APPLICATIONS OF MOLDED SYNTHETIC RESINOIDS..... | 630 |
| ADVERTISING—THE VITAL FORCE IN THE PLASTIC MOLDING INDUSTRY AND SOME OF ITS DIRECTORS | 632 |
| MORE ORDER IN BUSINESS MEANS MORE ORDERS FOR BUSINESS | 634 |
| <i>By R. L. Simmonds</i> | |
| WHAT IS PATENTABLE IN PLASTICS? | 636 |
| <i>By Charles W. Rivise</i> | |
| THE PLASTIC MOLDING INDUSTRY IN AUSTRALIA | 641 |
| <i>By W. John Vogel-Froben</i> | |
| MODERN PACKAGING | 645 |
| <i>By H. S. Spencer</i> | |
| RESINOIDS IN THE PRINTING ART | 646 |
| <i>By Charles W. Rivise</i> | |
| CONSTITUTION OF THE ARTIFICIAL RESINS | 653 |
| <i>By M. Koebner</i> | |
| SOME RECENT USEFUL BOOKS | 667 |
| TECHNICAL ABSTRACT SECTION | 670 |
| AND NOW IN CLOSING, EDITORIAL | 678 |

Advisory Board

B. F. Conner
William J. Hale
John E. Jackson
Carl S. Miner
E. E. Novotny
E. Emmett Reid
Charles W. Rivise
Joseph Rossman
Robert C. Schupphaus
John H. Stevens
John P. Trickey

❖

Robert H. Allen
James B. Neal
John G. Rossiter
Frank H. Shaw
L. F. Stratton

❖

Carl Marx
Editor

Nicholas Klein
Managing Editor

R. C. Gilmore, Jr.
General Manager

Robert C. Gilmore
Secretary and Treasurer

A. C. Blackall
British Correspondent

Heinrich Prehn
German Correspondent

All editorial and advertising communications should be addressed to the business offices, 114 East 32nd Street, New York, N. Y. Telephones, CAledonia 5524,5. Foreign advertising representatives, Willing Ltd. 362 Gray's Road, London, W.C.1 and The A.D.S. Service, Berlin.

Subscription Price, Domestic \$3.00. Foreign, \$4.00 per year. Single copies 35 cents; back issues, 50c. Publication Office, Washington, N. J.

Contents Copyrighted, 1930

PLASTICS PUBLICATIONS, INC., PUBLISHER

• • • • M ONOWATT



EXTENNA CASE

T HIS unusual piece, specially molded by Monowatt, solves a peculiar technical problem for a manufacturer catering to the radio trade . . . first, it offers perfect insulation; second, it meets the mechanical requirements of strength and shape; finally, its smooth finish and beautiful lustre increase its saleability.

MONOWATT *for greatest value*

PLASTICS & MOLDED PRODUCTS

Reg. U. S. Pat. Off.

Volume 6

NOVEMBER, 1930

Number 11

Molded Beetleware Pleases the Retail Purchasers

Direct Sales Through Drug and Department Store Outlets Mount Up.

AN INTERESTING experiment has been attempted. The Beetleware Corporation, subsidiary of the American Cyanamid Company and affiliated with the Synthetic Plastics Company, has pointedly brought a complete line of molded ware to the attention of the passerby on the sidewalks of New York. Attractive displays, like the one in the illustration, have been placed in the windows of several score independent drug-stores throughout the city. All types of localities have been selected for these retail sales outlets; business sections, hotel centers and purely residential neighborhoods.

Never has such a broad and direct sale of molded products been attempted before. A wide range of the Beetleware products are being stocked and sold. Bathroom tumblers, whoopee sets, drinking glasses and coasters in an array of ten colors, truly an artist's palette, as

the designer of the window display indicates, with his giant palette.

The sales campaign was begun only a few weeks ago, but according to report, the demand for the various items has kept an enlarged sales force busy taking orders and sever-

al custom molders working steadily on production. The public apparently is pleased to have these new products called to their attention and have responded with general purchases.

The Beetleware Corporation was formed some months ago as a retail sales organization for the molded household products made of Beetle, now being manufactured by the Synthetic Plastics Corporation. This material is also being used for industrial and other molded applications, the fabrication of the articles being handled by several custom molders throughout the country. Sale of Beetleware to direct retail outlets was first attempted during the last Christmas season, when the line was introduced in several department stores in the metropolitan area. The line was more comprehensive than the one displayed. It included molded cups and saucers, cake



Photo Worsinger

A typical drugstore Beetleware display

plates, sugar bowls and cream pitchers, sets of tumblers in leather cases and the like.

The success of this effort prompted the present expansion into the drug-store field. After a few weeks, results seem to indicate that the public is ready and eager to purchase this colorful, odorless ware, that has such a pleasant "feel" of warmth to the touch, which china or glass do not have, and that is markedly less likely to shatter when dropped on a tile or other hard-surfaced floor. Beetle's resistance to the action of such liquids as hot tea and coffee, fruit juices, alcohol, medicines and weak acids,

is a further recommendation. The non-porous surface does not absorb anything which stains other wares, used for such articles, so that soap in lukewarm water is adequate for cleansing it, strong alkali washing compounds being quite unnecessary. All these features recommend Beetleware. And what the New York shopper, in his haste, finds to his fancy should certainly please the taste of his counterpart in those hundreds of other cities where the pace is not so rapid. Beautiful Beetleware may yet be seen in every town throughout the length and breadth of the land.

The new ware has a special appeal for hotels and restaurants, now averaging one to three replacements of glass and china annually. Soda fountains are interested for the same reasons and because Beetleware's insulating properties are said to keep cold drinks cold, hot drinks hot, for longer periods than glass or china.

At present retail prices—tumblers, 40c each; cups and saucers, \$1.25 a set—Beetleware is not a competitor for the merchandise of the 10c store tableware department, but the manufacturers tell of a sales volume approaching seven figures in this introductory year.

Three New Applications of Molded Synthetic Resinoids

▲▲▲
HIGH heat resistance and lightness in weight were determining factors in the choice of Bakelite material for Brady Daylite socket adapters. The use of molded phenol resinoid also made possible a price reduction of more than eighty per cent.



MANY are the lighters that have been housed in some molded shape or form. This one comes from the West Coast, manufactured by the Raylo Electric Corp. of Los Angeles. It is molded in Bakelite in four different colors. Its distinction lies in being always ready for use, buttons or switches or even tipping being unnecessary to operate it.

▲▲▲
Molded bookends may yet be the support of those well-thumbed favorite volumes which you keep near at hand, beside your bed or on the library table. Molded in Durez, they may be obtained to match the furniture, in walnut or mahogany, or contrasting solid colors.



Molders' Group Attends N. E. M. A. Meeting at Old Point Comfort

C. A. Kurz, Jr. retires as chairman after guiding Section for two years

MR. C. A. Kurz, Jr., chairman of the Molded Insulation Section of Nema, called the annual meeting held at the Chamberlin-Vanderbilt Hotel, Old Point Comfort, Va., on October 20th, to order at 9:30 A. M. Those present were:

Prescott Huidekoper, American Insulator Corp.

B. E. Schlesinger, Northern Industrial Chem. Co.

W. L. Kelley, Chicago Molded Products Corp.

C. A. Kurz, Jr., The Kurz-Kasch Company.

H. D. Randall, General Electric Company.

D. Woodruff, Auburn Button Company.

H. V. Steele, Auburn Button Company.

J. C. Belden, Belden Mfg. Company.

E. S. Aumend, Nema.

T. W. Howard, Nema.

R. Dodd, General Plastics, Inc.

The minutes of the last meeting, August 22nd., and those of the preceding meeting at Pittsfield on June 13th, were read by the Secretary and approved without correction. A letter from Schneider Brothers, Chicago, was read tendering their resignation as members of the Section and, after discussion, it was moved and carried that this resignation be accepted subject to the usual investigation by the treasurer on behalf of this company's obligations to the Section. No action was taken on the questions of Closed Business Transactions or the Federal Trade Commission Practices at this time although, in an informal meeting with other Sections during the afternoon, Judge Neagle, legal

advisor to Nema, presented his views and the report of the Trade Association resolutions passed recently at Niagara Falls.

Mr. Schlesinger again brought up the question of the disposition of the balance left from the Generic Name Prize Fund. This also gave the opportunity for Mr. Aumend to speak of travelling expense equalization and the need for a reserve to expedite quicker distribution of payments. By combining these two problems it was decided to use the Prize Fund balance as a cushion for Travel Equalization. It was then called to the attention of the Section that the Bakelite Corporation wished to be furnished copies of sales statistics at the same time that these figures were distributed to members of the Association, and it was voted that these be given to both Bakelite and General Plastics, Inc.

Sylvester Elected Chairman

The next consideration on the agenda for the meeting was the annual election of officers to fill the positions of Chairman and Secretary. L. G. Sylvester, President of the American Record Corporation, Scranton, Pennsylvania, although absent, was nominated. On motion the nominations were closed, and he was unanimously elected to serve as Chairman for the ensuing year and advised by wire of his election. On a second ballot, following the nominations of B. Schlesinger and J. B. Neal (Norton Laboratories),



Mr. C. A. Kurz, Jr.
Kurz-Kasch Co., Dayton, Ohio

Mr. Schlesinger was unanimously re-elected to serve as Secretary for another year, and he gracefully accepted this assignment for a third consecutive term.

Mr. Randall made a motion embodying the thanks of the members for the expert and sympathetic guidance given the Section by Mr. Kurz during the past two years and expressing their sincere appreciation of his constant work on its behalf. This motion was passed by a unanimous standing vote, and Mr. Kurz then thanked the members for their expression and expressed the hope that they would extend the same cooperation to Mr. Sylvester in his work as they had shown in the past.

Next, Mr. Howard presented an extensive report on his accounting duties which is much too detailed to take up here but which seemed to meet with the full approval of those present. The three committees—Central West, Eastern Coast and New York—are now functioning and further details of the plan may be obtained through the Nema headquarters. Upon a vote the next meeting of the Section was

(Continued on page 662)



Allen Brown

Manager of Advertising, Bakelite Corp.

MANAGER of Advertising, and Assistant Treasurer as well, of Bakelite Corporation, is the genial and energetic Mr. Allan Brown. Indicative of his philosophy and personality is the following excerpt from one of his addresses which we discovered in the *ADVERTISING AGE*.

"In advertising, as in any other branch of business, there are a great many ramifications to be mastered. A whole lifetime could be spent on such intricate subjects as typography, engraving, color harmony, and general mechanics of advertising, without learning everything about these subjects.

"However, some of them at least are of minor importance and can be delegated to others, leaving the advertising manager free to give more time and thought to the important subjects of product and market analyses, of sales promotion and distribution."

His Diversified Experiences

Mr. Brown made his business debut in 1912 with Niles, Beament and Pond. In 1914 he served as New York agent for three steel companies. Reinforced by this experience he

ADVERTISING ---the Molding Industry and

joined the staff of Life Publishing Company in 1916 in charge of circulation. Since travel is one of the agencies for enriching the personality, opening the mind, and broadening the outlook, we should remark that Mr. Brown's position on *LIFE* led him to visit and revisit all of the principal cities in every state of the Union and Canada. Should you ever wish to find out the railroad route from Los Angeles to Tulsa or from Bangor to

Key West, you now know whom to ask, and do not forget that friend Allan is also possessed of abundant statistical information in general, ranging from hotel accommodations to news dealer accounts. Ask him to tell you about the best office and the best hotel. Also about the accounting house where they kept the files in the unused stove grate. Another good story is about the little hotel in Canada which closes at 9:30 p. m. and calls the porters by means of a bell rope.

The Great War made Mr. Brown a Naval Lieutenant, second in command on one of the numerous convoy ships. That assignment covered the years 1917-18. In 1919 he became secretary and treasurer of the Condensite Company of America and also directed the advertising program. The Bakelite Corporation was formed in 1923. he was selected to manage the diverse advertising problems and has since been elected an assistant treasurer in the Company.

Professional Distinctions

The professional honors of this man are many. He is First Vice President of the National

Industrial Advertisers Association, a director of the Association of National Advertisers, and a member of the National Commission of the Advertising Federation of America. Further, he has been honored by membership on the Harvard Awards Jury for 1930. Some sage has remarked that "industry is but the lengthened shadow of a man". Modern industry is so organized that many of its departments are virtually industries in themselves. Certain it is that with the increasing growth of Bakelite Corporation, its advertising department has moved apace. Anyone who has seen this department expand and prove its leadership, sees instantly, good evidence of the foresight and executive ability of its manager.

Prize Bakelite Advertising

In December 1926, Mr. Brown received, in behalf of Bakelite Corporation, the \$100 first prize in the advertising competition conducted by the New York Business Publishers Association. In July 1927, the beautiful sterling silver cup offered by *CLASS AND INDUSTRIAL MARKETING* for the best exhibit of industrial advertising, was presented to Bakelite Corporation. One reads that "the Bakelite entry was large and complete and made a fine showing in demonstrating the care and completeness with which the story of the myriad uses of Bakelite material is told to industry." In June 1929, Mr. Brown was cited for first honors for the "best exhibit of industrial advertising campaign in a publication". This award was from the National Industrial Advertisers Association.

PLASTICS & MOLDED PRODUCTS

vital force in the Plastic some of its *DIRECTORS*



Benn C. Budd

Assistant to the Vice-President-Sales, Celluloid Corp.

MR. Budd's faith in the future of the molding industry—particularly the molding of the new colored plastics, is founded on facts. For several years he has been making intensive market studies and analyses of all of industry for the purpose of ascertaining first the volume possibilities for colorful moldings and secondly the most efficient methods of distribution.

In this work he has been greatly assisted by the past experience covering fifteen years of advertising, sales and marketing work. Mr. Budd was one of the pioneers in radio and has to his credit the change of policy of one of the largest radio corporations in the world who showed a tremendous sales increase after Mr. Budd's plan of selling radio sets on the basis of the service they rendered rather than on the number of gadgets they contained. Under his guidance Firestone dealer outlets increased over 300% in one year. He originated the reserve fund method of adver-

tising which has now been adopted by hundreds of large industrial concerns. The company this method was prepared for showed sales increases of over 60% per year for several years and rose from one of the minor companies to the dominant factor in the industry within three years.

Even in this year of depression the advertising results secured by Mr. Budd for "LUMARITH" have established new records for returns. One mailing piece has the unusual record of 47% replies.

While Mr. Budd is an authority in the art of advertising,

Herbert S. Spencer

Advertising Manager
General Plastics, Inc.

JOHN LEARY in his intimate discussions with T. R. tells how President Roosevelt talked freely with the reporters but did not expect them to print a great part of that which he told them on many occasions.

In North Tonawanda, the correspondent of Plastics, found Herbert Spencer at a busy desk but willing to talk and well supplied with humorous anecdotes from his varied and many experiences, all of which was given out on the T. R. censorship plan.

"What can you tell them about me? Well, that's like the little colored boy, asked by his teacher to try

having handled over \$20,000,000 worth of national publicity in the past few years, he has a different view point on advertising from the average agency account executive or advertising manager. He believes that the most efficient method of securing a proper return from the advertising investment is to look upon advertising as a business force, just as money is a financial force and electricity a power force. Under this plan the prime object of advertising is to sell goods. To do this, man-power force is the prime essential, but carefully planned advertising will increase the man-power efficiency so that the cost of selling is considerably reduced.

Mr. Budd is a business writer of note, having contributed business articles to a large number of publications. He is also an author of several books on salesmanship and over thirty sales manuals.

and be more like George Washington. You will recall that he replied that he was like George Washington, and upon further questioning, explained, 'I se like him, cause I se him.' Well, I'm Her-

(Continued on page 654)



Mr. H. S. Spencer

More Order in Business Means More Orders For Business

By R. L. Simmonds

Manager Lumarith Division, Celluloid Corporation

ONE noticeable result of present business conditions is the change in production and purchase procedure of a large number of companies. The old rapid-fire, hit-or-miss methods are being replaced by a more orderly and methodical way of doing business.

When production could not keep pace with sales there was some excuse for the usual slips and delays in placing orders at the last minute. But today with conditions reversed there is more time available for planning ahead. This is bound to be reflected in better merchandise and added quality. And in many instances this better product will cost less.

Obviously a better product will create more sales. In many cases the new and better product will revitalize a sales force which is almost demoralized by its unsuccessful efforts to sell the old product in a depressed market. This activity on the part of design and production departments is truly making profits out of depression.

Renewed Interest in Plastics

To all engaged in the Plastics Industry — material manufacturers, equipment manufacturers and custom molders, it is an interesting fact that molded products are securing far greater attention than ever before. Many new applications have been discovered and in many cases molded articles have replaced metal, glass, wood, and paper materials.

The new light colored molding materials have made tremendous progress this year. They have opened up new markets for custom molders. They have succeeded in replacing other non-plastic materials.



THOSE who look upon the Plastics Industry as a "new" industry will be interested in the fact that the Simmonds family have been continuously in this field for over sixty years. Mr. R. L. Simmonds left college in 1914 to engage in molding activities. Starting at the bottom of the ladder with the Celluloid Corporation—the pioneers of plastic molding—he worked up step by step to his present position—one of the important in the plastic industry.

Long before the industry had achieved a fraction of its present importance, Mr. Simmonds was a recognized authority on molding methods. As head of the Celluloid Corporation's Novelty Department (which was essentially a custom molding plant) he successfully operated a plant with 110 presses, utilizing over a thousand different molds.

One of the most interesting pieces of work carried out by Mr. Simmonds was the moving of three different factories to a new location under one roof without loss of production during the move.

Mr. Simmonds has been associated with the development of Lumarith—the new cellulose acetate molding material—from its inception. And a large part of the remarkable success of this new non-inflammable molding material has been due to the experience of Mr. Simmonds in coordinating many varied factors so that development—production—sales—all work smoothly and efficiently.

They have justified the enthusiastic prophecies of a year ago—that the light colored materials would eventually open up new untouched markets of tremendous size.

Business has time to think today. What's more, business has cause to carefully weigh every possible method of increasing sales through producing better products. It is no exaggeration to say that almost every business executive

knows positively the truth of the statement that when you add beauty to your product you add volume to your sales.

More order in business means more orders for business because order insures careful attention by all executives to every possibility of improving their product. Careful attention and an interested study of the application of colorful molded additions to a product will almost invariably discover ways and means of putting more punch into an article.

As an example of how this new business procedure works, it is perhaps better to be specific rather than general. To adopt the phraseology of our medical friends we will call this example a "Case Study".

A manufacturer who we will purposely mis-name the Mammoth Corporation was confronted with the problem of sharply declining sales. Lowered prices did not have the stimulating effect expected. Worry was in the air—salary cuts were in the offing—lay-offs and shorter hours had already become a fact. Dividends were in danger and the company stock was establishing new low records.

Comes a New Light

Into this gloomy atmosphere arrived one morning a piece of direct mail advertising from a light-colored molding material manufacturer. A year ago it would have landed in the first waste-paper basket, but today its bold headline—"The Discovery of this new Material Effects your Sales" carried it right on to the sales manager's desk. He looked, read and carried it in to the President. This folder brought a new idea and they

knew that new ideas make new markets.

A letter was written asking for further information. This was answered requesting the name of their trade molder. They, in turn, replied giving the name of a molder who was experienced in molding light colors.

This orderly procedure was carried to the next logical stage, with a call by a representative of the molder, accompanied by one of the material manufacturer's technical staff. These men made an intensive study of the manufacturers product and recommended the use of Cellulose Acetate molding material on their product in a new and unusual way.

Production Schedule

Then, still following along an orderly method, the various factors influenced by such a change were analyzed. Production methods of the manufacturer showed that the new product would fit in with their schedule and that several manufacturing economies would be made.

Their distribution system was studied, contacted and reactions to the proposed new model were noted. At this stage it was obvious to everyone that their product in its new form would definitely increase both sales and markets.

A production mold was ordered and at the same time an order was placed for sufficient molding material to meet four months requirements. Once again the systematic method showed a great advantage because the market research unearthed the colors which would have the greatest sales appeal.

Success Through System

During the six week period required for the manufacture of a production mold, the special colors were made so that production could start as soon as the molds were ready. The sales department and the advertising department were busy preparing a new sales and advertising campaign to push the new line with its added beauty and color appeal.

Eight weeks after the Sales Manager opened and read his folder the sales force was out on the road with samples of the new product. They were assisted by an intensive but inexpensive direct mail advertising campaign.

A steady flow of molded pieces were arriving from their custom molder. This enabled them to complete the assembly of their product and fill the flood of orders arriving from their salesmen and distributors.

Two weeks after the introduction of the new product a second production mold was ordered and their future requirements of molding material estimated and ordered well in advance.

Sales of this large corporation are now on a satisfactory basis and production is running along smoothly. Which, if past experience is a guide, would not have been the case under 1929 methods. Then, along with hundreds of other

manufacturers, they were working in a frenzied rush-about manner which was the opposite of orderly. Mistakes were made which wiped out large portions of profits. Delays, due to lack of planned and co-ordinated ordering, were common and resulted in loss of business.

Ordering Molds and Material

This example shows the value of co-ordination. There is no question about the fact that Lumarith in a great many cases will increase the sales of an article of which it is part or container. But to harness its sales-increasing power to any product should be done in a systematic orderly way. Design, colors, mold construction, are factors, which if co-ordinated will result in securing the full value of a newer and more beautiful product in the minimum time. Which is just another way of saying that more **order** in business means more **orders** for business.

Medal for P. S. du Pont

PIERRE S. du Pont, chairman of E. I. du Pont de Nemours & Co., has been selected by the chemical industry to receive the first award of the "Chemical Markets" medal in recognition of distinguished economic services rendered in the cause of chemistry in America.

The conspicuous lack of any appropriate award on the part of the chemical industry for its leading industrialists as contrasted with the large number of honors bestowed on its technicians, engineers and chemists, prompted "Chemical Markets" to celebrate the fifteenth anniversary of the founding of the paper and the tenth of the ownership of Williams Haynes by instituting the medal.

Nominated with Mr. du Pont were E. F. Allen, president Mathieson Alkali Works; L. H. Baekland, chairman and president Bakelite Corporation; Her-

bert H. Dow, president Dow Chemical Company, and George Eastman, chairman of the Eastman Kodak Company.

New Lucite Toiletware

THE new Lucite sets of toiletware were shown in appropriate settings by the Du Pont Viscoloid Company at the annual Exposition of Women's Arts and Industries held in New York recently. The display served to emphasize how the newest boudoir accessories are authentically designed to tie in with the major periods of decoration. There were five dressing room ensembles, all harmonious in coloring and design, illustrating the proper settings for the various patterns, including Lustris, Monticello, Fleuret, Adam and Trianon. In each case, the backgrounds, whether they represented Early American, Colonial, Louis XV or Modern, all served to stress how much toiletware may add to the decoration of a bedroom or boudoir if properly chosen.

What is Patentable in Plastics?

A concise but lucid interpretation of our patent law, for the guidance of the investor, investigator and inventor.

By Charles W. Rivise

Copyright by the Author, 1930

IT follows from what has already been said that many inventions and discoveries fall outside of the pale of patent protection for lack of patentable subject matter. In this category may be placed abstract forces of nature, causes and effects. Thus in the case of *M'Ewan Bros. vs. M'Ewan* 91 Fed. Rep. 787, it was held that the mere discovery that a board already on the market had inherent strength did not entitle the first person to observe this fact to a patent.

The discovery that ether would produce insensibility to pain in animals and human beings was held not a proper subject matter for a patent in the celebrated case of *Morton vs. New York Eye Infirmary Co.* 5 Blatchford 116.

In the case of *In re Kemper*, Federal Case No. 7,687, the facts were these:—The alleged inventor discovered that blocks of ice placed on edge, due to the peculiar action of air currents within the ice, melted less rapidly than when laid flat. The Court held this discovery to be unpatentable.

In the case of *Wall vs. Lech* 66 Fed. Rep. 553, it appeared that the old process of fumigating plants and trees by hydrocyanic gas, after covering them with an oiled tent, was more effective in the absence of actinic rays of the sun. The Court held that the idea of carrying out the process at night or in foggy weather was not patentable. And in the leading case of *O'Reilly vs. Morse* 15 Howard 62, the Supreme Court held that Morse could not claim the exclusive right to his discovery that electromagnetism can be

The question so often arises as to whether a thing is new, and patentable. Our courts have struggled with the question "what is invention?" for years.

The principles evolved as the result of a long line of decisions are herein laid down in the layman's language.

The author was for many years an examiner in the United States Patent Office and is now a practicing attorney specializing in Patent Cases.

The first part of this article appeared in the October issue, p. 566.

utilized as a motive power for making intelligible marks at a distance, on the ground that it would amount to giving him a monopoly on one of the forces of nature for a particular purpose.

Ideas Alone Are Not Patentable

In all of the decided cases, the Courts have taken pains to point out the fact that though neither the cause nor its effect is patentable by itself, the means by which the cause is applied to produce the effect is patentable. Likewise, a new property discovered in matter, when practically applied in the making of a new manufacture or composition may be the basis of a valid patent. In other words, the principle of nature itself is not patentable, but its utilization by means of an art, machine, manufacture or composition of matter when properly expressed in one of these forms, is patentable.

Thus the Supreme Court al-

lowed Morse patent protection on his telegraph apparatus. And in the case of *American Box Machine Co. vs. Wilson Paper Machine Co.* 71 Fed. Rep. 884, the Court held that the patentee of Patent 244,919 had discovered that paper moistened with paste must be in the air a few moments before being laid on the box and that he had invented mechanical means to adapt the discovery to actual use. He was, therefore, held entitled to protection on his machine, but not on his discovery.

On the whole, the policy of the Patent Law to protect the utilization of the forces and principles of nature rather than the abstract discoveries themselves has reacted very beneficially upon industry. This is reflected in the large number of patented inventions consisting either partially or wholly in the utilization of forces or powers of nature such as chemical reaction, heat, magnetism, electricity, hydraulics, light, pneumatics, etc. As an example of a process utilizing an elementary principle of pneumatics may be mentioned the Weston method for forming a thinned portion along a web of paper. Among the many employing chemical and physical forces may be mentioned the vulcanizing process of Good-year's patent No. 1,085 and any of the methods of making and using the synthetic resins.

Invention

Having decided the question of patentable subject matter in the affirmative, it is then necessary to determine whether or not inventive ingenuity has been exercised in producing the alleged invention. For, it has never been the object of the law to grant a monopoly for every

shadow of a shade of an idea, which would naturally occur to any one working in the art or for every trifling device which could be produced by a skilled mechanic whenever required.

Results Are What Count

Presence of invention is always determined from the result and never from the mental process of the inventor. It is immaterial how small may be the actual effort involved—how easily, or how quickly the idea may have come to the inventor. It may have been the result of deliberation, conscious or unconscious, or of intuition or of any other exercise of the reasoning faculty. It may even have been the result of a happy thought or of what is usually termed an accidental discovery.

One Court even went so far as to make the following statement: "Invention is not always the offspring of genius; more frequently it is the product of plain hard work; not infrequently it arises from accident or carelessness; occasionally it is a happy thought of an ordinary mind; and there have been instances where it is the result of sheer stupidity. It is with the inventive concept, the thing achieved, not with the manner of its achievement or the quality of the mind that gave birth, that the Patent Law concerns itself."

Radiator Specialty Co. vs. H. W. Buhot 39 Fed. Rep. (2nd) 373.

Simplicity No Bar

Simplicity does not necessarily imply the lack of invention. As a matter of fact and of law, the highest trait of genius is to obtain simplicity. Thus, in the case of Emerson & Morris Co. vs. Simpson Bros. Co. 202 Fed. Rep. 747 involving Patent 624,653 to Stevens, it was held that the molding of an artificial stone compound in a mold of dry sand, which absorbs the excess moisture from the stone and hastens the setting, con-

stituted invention of a high order.

Similarly in the case of U. S. Mitis Co. vs. Midvale Steel Co. 135 Fed. Rep. 103 it was held to be invention to add a small piece of aluminum to the iron or steel after it has fully melted and just as soon as it is about to be poured into the mold, for the purpose of making the casting free of "blow holes."

Another instance is the case of Armstrong Cork Co. vs. Sloane Mfg. Co. 27 Fed. Rep. (2nd) 644 involving Patent 1,630,085 to Humphreys for in-laid linoleum imitating Dutch tiling. The only change over the art consisted in indenting or depressing the linoleum along the lines of juncture between the tiles.

Obvious Things Are Not Patentable

Simplicity must not be confused with obviousness. They are far from being synonymous terms in the Patent law. As has already been pointed out, simplicity is not evidence of lack of invention. Obviousness, on the other hand, is such evidence. But it must be strongly emphasized that if the advance in the art, however slight, appears obvious only after it has been made, this is no evidence of the lack of invention. Furthermore, that no matter how obvious the change over the prior art appears to be, a valid patent can be secured if the modification is accompanied by an unobvious or unexpected change in the result produced and provided that the invention is of sufficient importance.

For, as has been authoritatively stated by the Supreme Court in the case of Diamond Rubber Co. vs. Consolidated Tire Co. 220 U. S. 428.

"Knowledge after the event is always easy, and problems once solved present no difficulties, indeed, may be represented as never having had any, and expert witnesses may be brought forward to show that the new thing which seemed to

have eluded the search of the world was always ready at hand and easy to be seen by a merely skillful attention. But the law has other tests of invention than subtle conjectures of what might have been seen and yet was not."

And, as stated by the District of Columbia Court of Appeals in the case of *In re Huff* 1919 C. D. 152.

"Many things appear easy after they have been explained, and doubtless many a man has wondered why he failed to think of some apparently simple device or improvement that yielded a fortune to the one who did and revolutionized an industry. The simple fact is that the average person sees things as they are, and he who has originality of vision enabling him to visualize defects and the means of overcoming them should receive adequate reward."

Solving a Problem

Invention sometimes resides in the discovery or appreciation of the difficulty with an existing device or art, even though the solution readily becomes apparent after the difficulty is understood. This was the situation in the case of *ex parte Phair* 1928 C. D. 76 involving an application which matured into Patent 1,708,519 for a method of laundering textile fabrics. It appeared that Phair had discovered that the holes in laundered fabrics were caused by the corrosive action of sulphur compounds absorbed from the air during the drying. The rather obvious expedient then occurred to him to add a protective agent or neutralizing substance to the rinse water to counteract the effects of the sulphur compounds. This idea had previously been applied to tire fabrics before incorporating them into tires. The Commissioner of Patents on this state of facts decided that Phair was entitled to a patent, stating that this was a case where the mechanical or chemical change over the prior art

was the minor part of the invention. Of course it is clear that had Phair stopped at the discovery of the problem and had not completed the inventive act by suggesting the solution, obvious though it was admitted to be, he would not have received the patent. For, as pointed out previously, the discovery of a principle of nature by itself is not patentable.

The Courts have found it impossible to determine the presence of invention by applying the test of any general definition to the device under consideration. In one case it is possible to say that invention of a high order is present. In another case it is possible to say that there is lacking that intangible something which distinguishes invention from non-invention. The intangible something, however, cannot be segregated and defined so as to aid in the determination of the majority of cases, which lie in between the two extremes. Hence, the Courts have contented themselves by deciding individual cases on their own merits by means of a process of exclusion. As a result of the many adjudicated cases in which this process has been utilized there has grown up a set of negative rules, which are to be applied in given situations to determine whether certain variations in old devices and processes do or do not arise to the dignity of invention.

Mechanical and Chemical Skill

The first of these rules is that it is not invention to produce a device or process which any skillful mechanic or chemist could produce whenever required. Any advance in the arts as results from this skill the public is entitled to avail itself of as a fruit of mechanical growth and advance.

The test is whether an ordinary person skilled in that particular art would spontaneously make the change represented by the invention. If he would do so there is no patentability. A person skilled in the art is a

fictitious person supposed to know all that has been done in that field.

Mere Mechanical

Examples of changes that have been held to involve nothing more than mechanical skill and, hence, unpatentable, are as follows:—

1. Selection from large number of previously used substances, those that give the best results. Thus in the case of *Welling vs. Crane* 14 Fed. Rep. 570, Patent 98,727 to *Welling* for an artificial horn made from finely divided cotton or wool and powdered shellac mixed dry was held invalid on the ground that the ingredients of the patent had been judiciously selected from the many previously mentioned in the literature.

2. Making mottled or marbled rubber floor covering when it was old to make fountain pens of the same material. *Stedman vs. Puritan Rubber Mfg. Co.* 16 Fed. Rep. (2nd) 742 involving Patent 1,482,952 to *Stedman*.

3. Weighting knife bar of a roll paper cutter so as to obviate the necessity of pressing it down by hand when cutting off a sheet of paper. *American Roll Paper Co. vs. Weston* 59 Fed. Rep. 147.

4. Placing two sheets of fly paper together with their sticky surfaces face to face, for convenience in handling and packing. *Andrews vs. Thum* 67 Fed. Rep. 911.

5. In the case of *Western Electric & Mfg. Co. vs. Formica Insulation Co.* 272 Fed. Rep. 667, Patents 1,167,742 and 1,167,743 to *Conrad* for a gear made of Bakelized micarta were held invalid on the ground that the patentee had simply omitted the end shrouds or reinforcing plates of the gear invented previously by *Bakeland*. The Court was of the opinion that it did not require invention to see that the change could be made and that it required merely mechanical skill to make the physical change.

Change of Size or Degree

The second rule is that a mere carrying forward of the original though, a change only in form, proportions or degree, doing the same thing in the same way by substantially the same means, with better results, does not constitute patentable invention.

As examples of unpatentable changes falling within this rule may be mentioned:—

1. Increasing the size of a machine or some of its parts. Thus in the case of *Murray Rubber Co. vs. Le Laski & Thropp Circular Woven Tire Co.* 21 Fed. Rep. (2nd) 823, Patent 1,119,316 for a machine for building tires was held invalid on the ground that the only real change over the prior art was an increase in the size of the spinning rollers.

2. Increase of strength or rigidity of a mechanical part. Thus in the *Walker Mfg. Co. vs. Illinois Brass Co.* 265 Fed. Rep. 279 it was held that the strengthening of a radius rod by means of a brace could have been thought of by a layman.

3. Doing something more thoroughly. Thus in the case of *Continental Fibre Co. vs. Formica Insulation Co.* 287 Fed. 455 the Court had this to say about a patent for laminated board **uniformly** saturated with a phenolic condensation product to form a **homogeneous** product:— "Neither skillful selection of material, nor thoroughness of workmanship, nor superiority of product constitutes in itself and without change of method or novelty of use patentable invention."

4. Changing the shape of the cross-section of a balloon tire from an ellipse as shown by *Hawley* in Patent 1,433,008 to a circle as claimed by *Putnam* in Patent 1,537,879. The *Putnam* "Balloon Tire" patent was, therefore, held invalid in the case of *Steel Wheel Co. vs. Goodrich Rubber Co.* 27 Fed. (2nd) 427.

*This article will continue in
December.*

The Plastic Molding Industry In Australia

By *W. John Vogel-Froben*

Australian Correspondent

WHEN describing the development and the actual position of an Industry such as that of the Plastic Enterprises, a great many points present themselves to the writer and therefore it is not always easy to single out those which would be of interest to the reader. It is, however, necessary that the reading public be conversant up to a point with the conditions of the country I am dealing with, as this is necessary to understand the drawbacks and advantages with which an industry is faced.

Australia, up till comparatively recent times, was a country of purely a primary producing nature. The development of secondary industries has only taken place since the increase in population warranted the erection and upkeep of plant and the consequent locking up of capital. Australia, with an approximate population of 6,000,000 people, has therefore, until some years ago and still does in certain lines, imported most moulded parts from the United States of America and England.

The development of the moulding industry has been generally speaking, enormous during the last decade. While formerly radio and electrical parts were keeping the presses, busy, metal, wood and china have been replaced by moulded articles and Australia has been quick to appreciate the value of this new industry. Several factories have been established and today, by keeping in step with developments overseas, Australia is able to manufacture plastic mouldings equal to those of any other country in the world.

The difficulties which confronted the trade at the beginning were considerable and are not yet totally overcome. The different concerns interested in the manufacture of moulded articles have indirectly and unwillingly done their best to keep the whole industry down. Like the Textile Industry years ago, each concern has, or had, some "secret formulae" which were kept strictly under lock and key. Some of them even went so far as to have their pressure gauges in cipher, so that the uninitiated person might not see the pressure applied. This despite the fact that information such as this can be ascertained from any text book. To expect any help under these conditions was a thing unthought of. This attitude, however, seems to be changing lately. Moulders have found out that co-operation is better than opposition. And, in consequence, the whole trade benefits by it. Enquiries are passed on from one moulder, who might not be able to do the job, to another who, if opportunity arises, reciprocates. Through this, many an order which otherwise would have been placed overseas has been executed here.

Sales Methods

The initiative to create new and original ideas also lacks sadly. Most things moulded here are imitations and in some cases true copies of imported mouldings. Most moulders have gone the wrong way about doing things. In the United States a manufacturer turns out an article and then creates a sales organization to sell it. And nine

times out of ten he sells it, too. Here, to a great extent, conservatism still holds good—no risks are taken. A salesman's job is a hard one. He is told to get orders first and, should this prove impossible, he is then asked to sound the market for the possible demand. Here again we are up against two most potent factors, a comparatively small population and, especially in the electrical field, the lack of standardization. Most fittings are imported. And the making of a standard wall-plug, for instance, which would fit thirty different sockets is, to say the least, a rather hard job.

The method of soliciting business before taking the risk of spending money for the making of the mould is a bad practice. Very often the salesman sounds the market for some time, and the money spent there would invariably be better invested in a mould. And, furthermore, it has repeatedly happened that the response to a certain article to be placed on the market has been closely watched by some enterprising inventor who, in the crucial moment landed a shipment from overseas. Perhaps this article was not quite as good as the locally made one, but to the public a wallplug is a wallplug and an adaptor is an adaptor, and all the buyer requires is that the article he buys does the job he wants it for. And generally the lower price decides the purchase. "Australia Made" or not does not necessarily come into the bargain. In this way many a chance to replace imported goods by locally made ones has been lost. The disillusioned would-be-manufacturer invari-

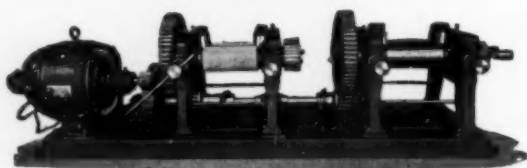
PLASTIC MOLDING

Producers of the finest
in Molded Parts for
thirty-eight years

Shaw Insulator Co.
Irvington, N. J.



National Laboratory Mixing Mills



Used extensively by manufacturers of
rubber, chemical, and plastic products
National Rubber Machinery Co.,
Akron, Ohio

—PYROXYLIN PLASTICS—

NIXONOID PEARL ESSENCE

NEW ENGLAND DISTRIBUTORS
SPARTAN AIRPLANES

Open and Cabin Ships

E. W. Wiggins & Co., Inc.
Leominster, Mass.

SHEETS RODS TUBES

ably applies for a prohibitive duty to be placed on an article competitive to his. He blames everybody and everything for the failure, but fails to see that only lack of foresight led to his downfall.

Table Ware Production

Despite these not too encouraging facts, it is surprising to note how plastic mouldings gradually come to the front. The first step away from the orthodox electrical field was the substitution of formerly china made goods with Plastic Moulded Ware. Table Ware of a phenol resin composition has been on the market here for a number of years, in spite of the fact that great drawbacks were encountered. The most outstanding were that the ware tasted and discoloured through use. Gradually these difficulties were overcome to a certain extent. The pioneers in this line have at present a spraying or coating process, which gives the finished cup or saucer a shiny finish. This, of course, must again increase cost of production. The makers of this line had to break down not only the prejudice of the buyer to drink out of anything not made of china, but also that of the colour question. To mould china white crockery has not yet been seriously attempted. It would have been practically impossible before the introduction of urea powders, this introduction being a rather recent event. Considerable trouble has been encountered, first in procuring these urea powders and as regards white powders no provisions have been made in plants installed in the past to keep the presses free from dust. There is no doubt a large outlet for table ware in this country, especially if made of a white colour. But here again there are unavoidable drawbacks. Urea resins are not only more expensive, but their curing time is also longer which, influenced by overhead and time, brings the finished article beyond the means of the

general buying public. The only concern to my knowledge who have built their plant to cope with this factor is a company named "Plastic Industries Ltd.", who by means of independently worked fully automatic ejectors on multiplaten presses, can bring the price of urea-base white and coloured moulded crockery down to the level of that approaching china of better quality. Moulding plants which have been built for the requirements of say, five years ago are to-day sadly antiquated, due to the increased uses found for moulded goods, and also on account of the tendency to mould larger and larger objects. There is, as an illustration, the instance of a bright soul in Sydney who had a mould made for a proprietary line of his. For close on twelve months he was trying to locate a press large enough to take the mould between the daylight when closed. This particular mould has seen most of the moulders in Australia and none of them are even eager for a trial. No moulding has ever been produced from it, and to-day the word "Bakelite" to that man is like holding a red rag to a bull.

Limited Markets

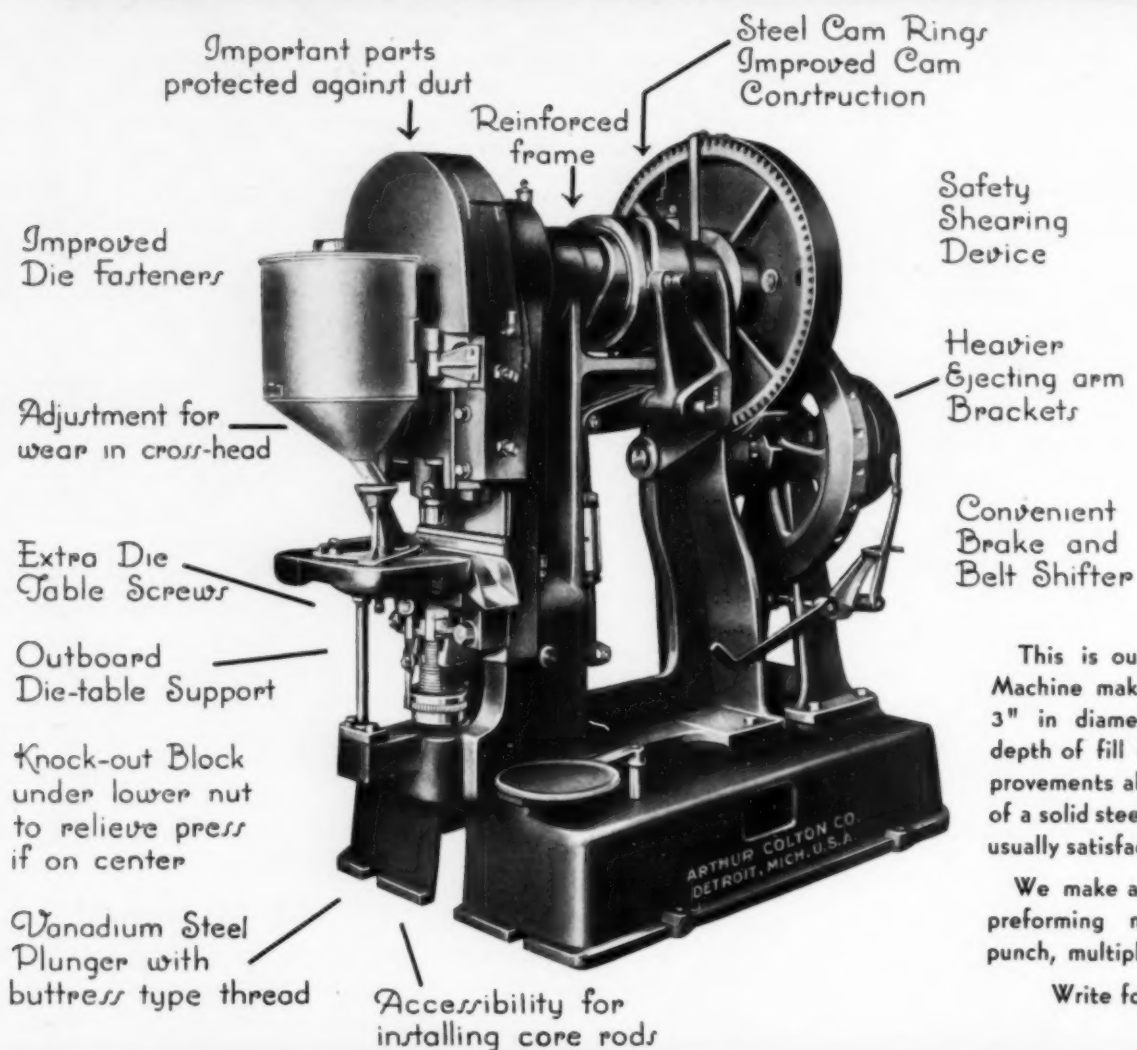
Another and most important factor is the limited number of mouldings required. While in other countries, due to larger population and standardization of lines, orders for an article may run into millions; orders reaching the 100,000 mark here are very few and far between. An order for 25,000 to 50,000 is considered quite good business. This again reflects on the before-mentioned fact of soliciting business before putting the moulds into work. The first stipulation of the customer is that the article be as good as a similar imported one. We are in the fortunate position of being able to meet him on that. Furthermore, the price of the locally made article has to be the same as the imported one,

if not lower. If it is higher, the business is lost for us. "Australian Made" does not always decide the placing of the order. All the slogans in the world will not get the business if the price is not right. Diesinking is an expensive proposition, and if the cost of the mold has to be spread over a limited number of articles, especially if the mould in question is a multicavity one, up goes the cost of the individual article. To make a two or three cavity mould only, does not solve the problem to any great extent, as in this instance overhead swallows up what would have been saved in mould cost. Output goes down and in mass production overhead is based on a stipulated daily output. To use automatic ejection does not pay for such limited quantities. Consequently the hand-operated mould is the one that is mostly used here, except where weight makes this impossible.

Raw Materials Imported

The fact that the cost of raw material, most of which is imported either from the United States, England or Germany, is much higher in Australia than in either of these other countries also plays a very important part. Considerable money is tied up in stocks and only very few wholesalers are able to carry any large quantity. Efforts have been made to manufacture Phenol-Resins here, but so far the results do not justify considering the effort of anything other than laboratory work. As far as the future of the industry is concerned, there is no doubt that ever increasing fields will be opened here and if we can only tear ourselves away from the copying mania and try to think out new uses for plastics, I feel sure that Australia can soon establish the Industry as soundly and as well rooted as it is at present established in America or Europe.

A NEW IMPROVED PREFORMING PRESS



This is our new 5½ Tablet Machine making tablets up to 3" in diameter and having a depth of fill of 2½". The improvements above, with the use of a solid steel frame, insure unusually satisfactory performance.

We make a complete line of preforming machines: single punch, multiple or rotary style.

Write for literature.

**COLTON
DETROIT**

ARTHUR COLTON COMPANY
DETROIT MICHIGAN

MACK MOLDING CO.

PRECISION MOLDERS OF PLASTIC MATERIALS

WAYNE

NEW JERSEY

Modern Packaging--

The Molding Industry promises to play an important part in its development

By H. S. Spencer

Advertising Manager, General Plastics, Inc.

NOT since the year of the Radio rush, those good days when everyone had money enough to make his first down payment and bought the biggest, if not the best set, has the Plastic molding industry, phenolic, casein, cellulose and what-have-you, pointed its merchandising guns so nearly in one general direction—packaging.

The packaging field presents possibilities, no doubt about it (See *Plastics*, September 1930, page 527). It is good business for much of it is repeat business. The future in packaging is however, not in caps for collapsible tubes. That business is confined to a comparatively few large accounts and thousands of very small ones that only organizations with an established method of distribution could adequately care for, and an excellent source of supply and manufacture have existed for several years. Manufacturers of molded caps are tooled up and making them on an extensive scale through automatic machinery, both for the especially designed job and the general or stock designs, and sales distribution on stocks have been established at strategic points for quick delivery.

Bottle caps are quite definitely established along the same lines. Two of the largest bottle capping manufacturers, Armstrong and Anchor with sales organizations and customers of many years' standing, have recently entered the field, as sales distributors for molded closures, and then there is the well established and extensive work of longer standing by Colt. But the more general packaging offers opportunities, though many starts have been

made and the field will be crowded; crowded undoubtedly to the neglect of others promising excellent opportunities and less in the requirement of specialized knowledge — is a business of specialists.

Those who secure the business must be more than manufacturers of compound, more than molders of it. Ability to design is essential. Packaging is a highly specialized art. Men have devoted years of study to it. There are organizations that do little else but study products and how best to package them. Good packaging requires the artistic knowledge of the designer, the merchandising ability of experts and the whole must be presented with an advertising understanding of the consumer's attitude toward the package—in other words, its favorable acceptance.

The manufacturers of everything from food products to automobiles are realizing today the value of good packaging. It's a long step from the days when the milkman came through the street ringing a bell and you carried out the large pitcher for milk and the small one for cream.

Consumer Appreciation

The appreciation of package value is keenly realized today. For example, we have seen Grape-Nuts just recently come out in a new box. Shredded Wheat have discarded their old carton, long in use and on which they have spent thousands of dollars to make the public familiar with it. This re-designing on their part, has not been done without study and appreciation of the value and the importance of securing the buyer's attention. Their

package must predominate on the dealer's shelf.

Consider for instance, the manufacturer of a new shaving cream. There are almost 200 fairly well known shaving creams on the market. Try to put a new cream in any drug store and, succeeding in this, then get men to buy it in preference to their old favorite. It must not only be a good cream, but it must also be in a really attractive package.

The manufacturers of Ingram's Shaving Cream showed keen merchandising ability when they brought out the blue bottle, though it is a devilish thing to use. Manufacturers of Brisk, with the oval box, also attracted the buyer's favorable attention. These unusual packages were undoubtedly developed to establish new products and the time will come when without question these products will be shifted to tubes which will be the most practical container for them.

Organizations expecting to do business in the packaging field can follow the leader, bid on jobs that are already designed and probably lose money, or they can form connections with specialists in package design. Undoubtedly a few of these at present are acquainted with molding or mold design and others must be carefully guided.

Those in the industry who have been working fairly intensively in this field for some years have created some excellent work and established a reputation that it would be unfortunate to see the uninitiated impair through poor design and construction, bad color combinations, etc., thereby tending to set back the whole industry.

The Resinoids in the Printing Art

Many have been the applications of the synthetic resins, but in the art of printing arts the work has been almost monopolized by the inventive genius of E. E. Novotny, who has by far the greatest number of patents in the field.

By Charles W. Rivise

LAST August (p. 465) we indicated a continuation of this digest of patents appertaining to this particular field. Lack of space prevented our so doing. The article began in the June issue of the present year (p. 324).

E. E. Novotny, 1,377,513, May 10, 1921. Filed Aug. 6, 1918.

Printing Plate Matrix

Upon lower platen of press is placed a chase having locked therein a body of type associated with an etching; an alloy sheet of lead and tin as described in Patent 1,377,512 is superposed thereon; said sheet is coated on its back with a rubber or phenolic cement; a lead plate larger than the alloy sheet is superimposed upon the assembly and heat and pressure are applied to consolidate the matrix and to make the impression of the etching on the alloy sheet and of the type matter on the lead sheet. A backing composed of fibrous material such as matrix paper impregnated with Bakelite or Condensite is preferably united to the foil sheets during the pressing operation.

E. E. Novotny, 1,377,514, May 10, 1921. Filed Aug. 6, 1918.

Printing Plate

Fibrous material such as chip-board, straw-board, paper or felt is perforated and impregnated with Chinese wood oil, cylinder oil or a phenolic varnish or it may be preferably first partially impregnated with a phenolic varnish and then saturated with mixture of high flash point cylinder oil. The treated sheet is then interposed between sheets of unset con-

densation product such as Bakelite or Condensite and the assembly pressed against matrix having metallic face in press under heat and pressure to make impression and unite the condensation product through the perforated sheet.

E. E. Novotny, 1,377,515, May 10, 1921. Filed Aug. 6, 1918.

Method of Rectifying Printing Plate

Plate of Bakelite or Condensite is molded under heat and pressure for sufficient time to obtain relatively hard skin-face and back portions and to provide a printing surface for the face portion with or without dots, pits or depressions in the back portion and then subjected to heat and pressure to force irregularities in the face portion inward in the body of the plate while maintaining the back portion of the plate flat. To maintain the same depth or to increase the depth of the non-printing portions of the printing surface, a protective coating of beeswax and rosin oil may be applied to the printing portions, and the coated plate subjected to a sand, carborundum or emery blast, cutting away the non-printing parts to any desired depth.

E. E. Novotny, 1,377,516, May 10, 1921. Filed Aug. 6, 1918.

Method of Making Printing Plate

Plate of Bakelite or Condensite is preliminary heated and pressed between flat surfaces to form relatively hard-skin face and back, then cooled and stored away until needed. To produce printing characters on one side of the plate, it is placed in contact with molding face of print-

ing matrix and heat and pressure applied to both.

The printing plate may be made by interposing perforated chip board between sheets of plastic condensation product and causing the plastic to unite through the perforations.

E. E. Novotny, 1,377,517, May 10, 1921. Filed Oct. 23, 1919.

Method of and Apparatus for Molding and Curing Plastic Articles

Article already formed of Bakelite or Condensite is suspended in container and subjected to pressure of heated molten metal such as lead, alloy of tin and lead, or of bismuth, lead, tin and cadmium, the heat and pressure of said metal being gradually increased as the treatment progresses to harden and set the condensation product. Metal may be pumped into container or level of metal kept constant and its pressure increased by pumping in oil to fill rest of space.

Article may be printing plate formed by pressing plastic material against matrix, or tube wound on mandrel for a cylindrical plate.

E. E. Novotny, 1,377,518, May 10, 1921. Filed Dec. 11, 1919.

Printing Plate and Method of Making Same

Fiber board impregnated with Bakelite or Condensite is pressed between platens and partially baked to form skin coating and then is united to bond paper impregnated with infusible phenolic varnish after which the opposite face is molded against printing plate matrix. To avoid buckling of printing plate thus

(Continued on page 651)

made, a coating of water glass is applied to the paper backing; another fiber board which has been impregnated with condensation product and partially baked is united therewith without heat; another sheet of impregnated bond paper is applied and the entire assembly is united to a wooden block by means of water glass.

E. E. Novotny, 1,377,519, May 10, 1921. Filed Nov. 2, 1920.

Printing Plate

Blank consisting of plurality of sheets of cardboard, strawboard, paper, or cloth impregnated and cemented together with a phenolic condensation product made as described in Patent 1,398,146 is coated on both sides with barrier coats of condensation product mixed with barium sulphate and further coated with richer and thicker coat of condensation product mixed with lampblack and alcohol and cured as usual. Blank is heated while being held against matrix to make printing plate after which it may be further hardened.

W. J. Yeowell, 1,379,430, May 24, 1921. Filed Aug. 12, 1913.

Printing Plate and Method of Making Same

The printing plate has a body portion of a phenolic condensation product with a metallic printing surface incorporated therewith and may be made by placing the composite sheet against the molding face of the matrix and then applying heat and pressure to reproduce the characters and to cure the condensation product. A variation is to coat the matrix with a metalliferous material, thereafter apply the condensation product in suitable form and apply heat and pressure to mold the condensation product and metallize the metalliferous coating. The condensation product may be in sheet or powder form.

See divisional Patent 1,379,434.

Wm. J. Yeowell, 1,379,431, May 24, 1921. Filed April 25, 1916.

Printing Plate Matrix and Method of Making Same

Purports to be an improve-

ment over the invention described in Patents 1,379,430 and 1,379,434.

Upon a type form having half-tone matter as well as printing are superposed one or more layers of metal foil, a blanket of fibrous material preferably treated with a sharpening medium and a definition producing layer all as described in Patent 782,184. The assembly is then subjected to pressure in a roll press; the blanket and the definition producing layer are removed and a backing is united to the metallic sheet by means of heat and pressure.

The backing may consist of two layers of Redmanol having incorporated therein a filler such as wood flour, powdered metal or metallic oxides and an interposed sheet of crinoline, coarse linen, felt, paper, etc. as a reinforcement.

The matrix may be used to make the printing plate described in Divisional Patent 1,379,432.

W. J. Yeowell, 1,379,432, May 24, 1921. Division of Patent 1,379,431.

Printing Plate and Method of Making Same

Purports to be improvement over Patent 1,379,420.

Upon the metal face of a matrix having type, half-tone or etching or all three impressed therein is superimposed a plate blank in sheet or powder form made of Redmanol and a filler such as wood flour, powdered metal or metal oxide and having a strengthening backing of fabric, crinoline, coarse linen, felt paper, etc., and the assembly is subjected to heavy pressure and heat. The strengthening fabric may be omitted. A block of wood may be united to the plate by means of heat and pressure sufficient to cause the Redmanol to exude from the plate to serve as a binding medium. The wooden backed plate is claimed in Divisional Patent 1,379,433. A variation is to face the plate with metal.

The fabric backing may be incorporated into the plate before impression of the blank

and the metallic face may be united during the molding operation by means of liquid, pasty or powdered condensation product. The metal facing may be made by applying a metallic oxide paste to the matrix face before molding.

A variation is to form the blank of alternating layers of condensation product and paper, felt or fabric and a facing of metal.

Another variation is to form the plate of hard polished sheets of suitable filler and condensation product alternating with layers of condensation product, the assembly having a thin paste applied to one face in which the impression is later formed.

W. J. Yeowell, 1,379,433, May 24, 1921. Division of Patent 1,379,431.

Printing Plate and Method of Making Same

Upon the matrix are superposed a blank made of Redmanol, a strengthening fabric such as linen or crinoline and a wooden block. Pressure and heat are then applied to consolidate the assembly and make the impression. The fabric may be omitted.

A variation is to apply liquid, pasty or powdered Redmanol to the face of the matrix or of the plate so that the metallic face of the matrix will become an integral part of the printing plate and come away from the matrix.

Another variation is to coat a block of wood with Redmanol and to subject the coated block to pressure and heat against the matrix face. The block may then be cut into individual characters.

W. J. Yeowell, 1,379,434, May 24, 1921. Division of Patent 1,379,430.

Printing Plate Matrix and Method of Making Same

Disclosure is substantially the same as that of Parent Patent, the claims being drawn to a matrix made by rolling a thin metallic sheet in contact with a type body, applying a blanket of

(Continued on page 663)



Above: A pull-chain socket husk, showing interior and exterior, custom molded by ARC in two parts, which are joined only after the electrical contact metals and mechanical parts are set in place by the manufacturers for whom these pieces are molded.

To the left: This is an intricate piece molded by the American Record Corporation—toggle switch receptacle, showing accuracy of design as a result of complete cure of phenolic compound—illustrating both outside and inside views to accentuate the complications of this particular molded part.

The American Record Corporation Follows with Precision the Exact- ing Specifications of Manufacturers Who Demand Perfection in Their CUSTOM MOLDED PARTS

THE reproductions of actual photographs on this page show quite clearly the fine quality of work done by the American Record Corporation—a type of super service that is not to be equalled anywhere for sheer correctness in all custom-moldings. Just look at the intricacy of design—the infiniteness of detail that has been worked into these molded parts. Manufacturers everywhere recognize the efficiency of ARC service—they know that work done in these large plants will be done right—that's why so many, many of them insist always on ARC custom-moldings for their difficult as well as their more simple jobs.



Top: Red Top Insulating Husk for outside electrical decorating.
Bottom: Electrical Switch Base. All holes being accurately located.



The identifying trade-mark of
superior molded parts for
half a century.

FORMERLY SCRANTON BUTTON COMPANY



American Record Corporation

Molded Parts of **PHENOLIC** for Every Purpose
BAKELITE The Phenomenal Molding Material LACANITE

DURITE

DUREZ

Principal Offices and Plants: SCRANTON, PA.

NEW YORK: 50 Union Square CHICAGO: 645 Washington Blvd. DETROIT: 145 Eastlawn Ave. CLEVELAND: 1900 Euclid Bldg.

Constitution of the Artificial Resins

By Dr. M. Koebner

Dr. F. Raschig, G. m. b. H., Ludwigshafen on Rhine

RESINS, which in previous decades proved to be disagreeable accessories of most chemical reactions, to-day partly have become valuable main products. Special mention may be made of the artificial resins made out of phenol and formaldehyde, first used for manufacturing purposes by Dr. Baekeland around 1907, which have attained an importance never dreamt of. No wonder that many scientists took part in the solution of the riddle, which the chemical construction of these resins, presented. However, until recently no one has offered a very satisfactory solution.

Just a year ago there appeared an article by Blumfeld in the *Chemiker-Zeitung* No. 51, page 493, which, although it contained no new experimental material, approached the truth very closely in a speculative way. He considered the Novolack to be chains of phenol molecules and groups of Methylen. Recently G. I. Morgan together with Megson and Drummond (*Chemistry and Industry* 245 T) published an experimental essay, in which Morgan mentions a German Patent No. 301 451 of the Badische Anilin & Soda-Fabrik (B.A.S.F.). The new facts covered by this patent, are contained in an application by Dr. F. Raschig G.m.b.H., January 31, 1915, the application being assigned after some time, for commercial reasons, to the B. A. S. F.

The substance of importance for the following explanation as to the constitution of the phenol resins is described in example 2 of the German Patent No. 301 451.

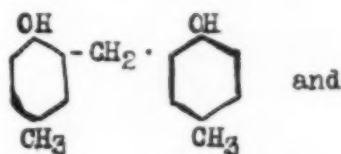
By dissolving 168 parts of Paracresol-dialcohol in 1000 parts of Paracresol and adding

thereto 25 parts of concentrated hydrochloric acid, a substance with a melting point of 215° C. will be obtained. The same substance together with another having a melting point of 126°, was obtained by Dr. K. Höbold in Raschig's laboratory out of a mixture of two parts of Paracresol and one part 30% formaldehyde with hydrochloric acid.

These facts and the essential part of the subsequent communications had been imparted by letter to the B. A. S. F. in Ludwigshafen on the Rhine on April 29th, 1914.

Analysis and Molecular Weight

The ultimate analysis yielded almost the same percentage of carbon and hydrogen. However, the substance with a melting point of 126° C. had a molecular weight of 228, and the substance with a melting point of 215° C. a molecular weight of 348. The simplest explanation of this fact was the assumption of the following constitution for both substances



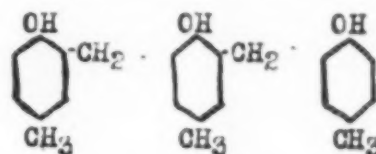
M.P. 126 C.

which was confirmed by a further study of both substances.

In view of these two formulae, there was good reason to believe, that the divers properties of the Novolacks, Resols and Resites could perhaps be explained by the length of chains. While it seemed quite hopeless to arrive at crystallized substances with phenol itself and most of its homologues, paracresol, offered a chance for success, because of its symme-

trical constitution. This thought was confirmed very soon. The above reported formation of the tri-body, as I should like to call it hereafter for simplicity's sake, made out of Paracresol-dialcohol and paracresol, at once showed the way to manufacture, in an unequivocal manner, chains of any length. For simplicity's sake the substances mentioned hereafter according to the number of cresol molecules united into chains by Methylen groups, will be referred to as di-, tri- tetra- etc. bodies.

By condensing 2 molecules di-body with 1 molecule of formaldehyde, there is in fact produced in a simple reaction the tetra-body. By condensing 2 molecules of di-body with 1 molecule of paracresol-dialcohol, the penta-body appears. In the same manner will be produced out of 2 molecules of tri-body and 1 molecule of formaldehyde the hexa-body and out of two molecules tri-body and paracresol-dialcohol the hepta-body. In this manner chains may be



M.P. 215 C.

built up of any length and instead of paracresol other phenols may be used. The formation and the qualities of these substances thereof support Blumfeld's hypothesis, put down by him in analogy to the sulphur phenol.

The study of these chain substances lead to especial surprising fact. Whilst the substances consisting of a small chain of links could be dissolved in a watery caustic alkali, the same



American Insulator Corporation

NEW FREEDOM, PA.



PLASTIC MOLDING

COLD MOLDED AND PHENOLIC PRODUCTS

BEETLE
LUMARITH
BRAYLITE



Sales Offices:

N. Y.: Graybar Building
Detroit:
General Motors Bldg.

Chicago: 9 S. Clinton St.
Bridgeport, Conn.:
421 Meigs Bldg.

as any other phenol, the substances as soon as the chain consists of 7 links or more are no more soluble in a solution of caustic soda. Thus it appeared in the beginning. Closer investigation, however, indicated that soda salts were formed, which are quite insoluble in water.

This apparent insolubility of the many-link chain substances in a solution of caustic soda had mislead the investigators engaged on this problem. They concluded from the insolubility of Resites in a solution of caustic soda, that their character of phenol somehow might have been lost by etherification or esterification and even Blumfeld in spite of his so-far correct hypothesis cannot free himself from this suggestion. There are in fact plenty of examples that high molecular phenols lose their solubility in alkali.

The Editor regrets the lack of space to complete this article but it will be concluded in a later issue.

Advertising Directory of the Plastic Industry

(Continued from page 633)

bert Spencer and better things than I'll ever do, are already in print under that name.

"My Father's people met Will Rogers' Indian ancestors when they helped my Father's folks tie up the Mayflower. My Mother's had more respect for their native land or maybe they believed it really was a little bit of heaven. Anyhow, that side, the Shearmans, did not get restless until the Eighteen Hundreds, when they left their castle in Ireland for Australia and Canada.

Me. Oh, I attended public schools; was captain of a football team, but the game outgrew my bantam size so Walter Camp never had a chance to put me on his All-Americans. Later I went to work and as I tramped across the Brooklyn Bridge, I presume I often saw Al Smith among the boys swim-

PLASTICS & MOLDED PRODUCTS

ming under it, and wished I could trade places with him.

I started business (I presume my business career, I should refer to, as in articles like this, they are always careers) as a bank clerk, but the kind of figures I was involved with were not so interesting. Next, I was a runner and I ran stock so successfully that I should have become a ruler like the Admiral in Pinafore but I didn't and nearly lost my eye sight and got a bloody nose for it was forcibly explained by more experienced and older runners, that the art was not to run, at least too often.

Next, I became a diplomat by mail, complaint correspondent. From that I became entirely dishonest and went into the advertising business. From here on, my experience has varied; selling over the counter, selling "big business men," selling housewives from door to door. Some of it because of necessity, some of it for practical experience, and here supposedly the more interesting figures come in, for part of this involved corsets which contrast sharply with caskets, fire extinguishers, furniture, real estate, automobile tires, advertising, etc.

Salesman, copywriter, office manager, branch store manager, advertising manager, sales manager, soldier—yes, I tried to be a tank operator—Army tank, a marine, an officer via the schools; without success. After I had given up wanting to die for my country, and went about my own business as some kind of a manager or other, my country decided they wanted me. After about a year of treating me rough, they permitted me to buy my own uniforms and accessories, and that is one reason why I never wore boots and spurs.

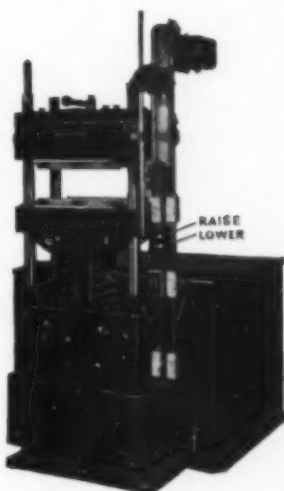
Married—one-fourth dozen youngsters—like a few cigarettes, coffee, books, woody back roads, pretty girls at a distance (reasonable), and to be left alone."



Who IS TO BLAME FOR RUINING YOUR PROFITS?

For instance, the cost of replacements due to hydraulic packings blowing out, or leaky valves and accumulators . . . the idleness of the presses while the repairs are being made . . . the mechanic's time . . . the spoilage due to uneven pressure. And all the other expense-making disorders.

Is there a way to eliminate them? The only way is to get rid of the hydraulic feature. Terkelsen engineers have built an electrically operated molding press, (it is strictly mechanical, no hydraulics are employed whatsoever) with a resulting reduction of 40% to 80% in maintenance cost. The many expensive accessories, costly upkeep and shutdowns which exist in hydraulic equipment are entirely eliminated.



It is the ideal press for closed, semi-closed or open molds. Any kind of synthetic compound in powder form, preformed briquettes or plastic material may be used. It is equally suitable for deep or shallow molding.

The pressure can be changed from a few hundred pounds to maximum capacity in 5 seconds. Due to its ease of operation and type of control, one operator can operate a larger number of presses.

Send For Leaflets

giving a complete description of this improvement in press construction.

TERKELSEN MACHINE COMPANY

Manufacturing Engineers

330A STREET

BOSTON, MASS.

Alginic Acid and Its Applications in Plastic Products

Industrial manufacture of algin from various seaweeds; and the preparation of formed masses

By M. Deschiens

Chemical Engineer (France)

IN the September issue of PLASTICS, page 501, there began the first portion of the present article, describing the nature and properties of the alginates, and their chemistry and historical development of their extraction. We now come to the part relating to the industrial manufacture of alginates.

Industrial Manufacture

The basis of most of the commercial processes for the preparation of alginates is as follows. The seaweeds are dried and then digested in a solution of sodium carbonate. In about 24 hours the weeds will have passed into solution, forming a very viscous liquid. This solution is poured into water, or is diluted with water which is then acidified with a strong acid, such as hydrochloric or sulfuric acid. The insoluble free alginic acid will gather as a voluminous precipitate at the top of the liquid, whence it is carried by the carbon dioxide that is evolved on acidification of the liquid.

In Europe the seaweeds commercially exploited are *laminaria flexicaulis*, *cloustoni* and *saccharina*. The process involves drying as well as demineralization.

The seaweeds are first chopped up and are then treated in large vats with a solution of sodium carbonate, wherein they swell up and disappear in about 24 hours. This process may be carried out in the cold, or accelerated by means of heat, though in the latter case the solution is less viscous. The solution is almost a paste of the alkaline solution is strong and

In the September issue, we reproduced the first part of this article, which is taken from our French contemporary Revue des matieres Plastiques, 1930, 6, 260.

The present portion of the article deals with the practical side of the utilization of the seaweeds.

of small volume. As it is unfilterable in this condition, it is diluted and then filtered to remove the cellulosic residue.

The filtrate is a greenish liquid of syrupy consistency and contains a considerable amount of salts in addition to the excess of sodium carbonate. The algin in the solution exists in the form of sodium alginate and of sodium salts of the nitrogenous constituent of the original algin, and of water soluble portions of the weeds. By acidification of this solution free alginic acid is formed.

The alginic acid, buoyed up by the bubbles of carbon dioxide, rises to the surface of the acidified liquid, forming a gummy translucent greenish mass. After letting go of the carbon dioxide, it will settle to the bottom of the vat. The alginic acid is separated from the solution by means of a filter press, sufficient pressure being used to insure the removal of most of the mother liquor.

The insoluble cake of crude alginic acid is purified by again converting it into sodium alginate by measured amounts of concentrated viscous solution, which is diluted and filtered if need be. The solution, after this dilution, and whether fil-

tered or not, is once more acidified, whereby the alginic acid is precipitated in much purer form than before. It is separated from the reaction liquor by filtration and is then pressed. In order to get a particularly pure product, the above treatment, consisting of alternate solution in sodium carbonate and precipitation by acids is repeated as many times as need be.

While the product thus obtained is greenish by reason of the presence of chlorophyll, it may be bleached, especially well when still in solution, by treatment with hypochlorites. Alginic acid always contains a small, but definite amount of nitrogen.

It is evident that, depending on the purity desired in the finished product, the above described operations can be stopped at any point.

For instance, the seaweeds may first be demineralized (or not) and then merely given a short surface-treatment with alkalies (which may even be omitted), and merely agglomerated by high mechanical pressure and dried. The molded products thus produced possess a certain degree of plasticity and can be employed for various purposes such as for insulation, especially for heat-insulation. Their coefficient of conductivity is from 0.040—0.060.

Manufactures of Alginates

Various alginates are now articles of commerce. Most of these are derived from alkaline alginates, such as from sodium, potassium and ammonium alginate. They are found commercially in the form of flakes or powder. (Thus double alginates

of alkalies or ammonia with copper, aluminum, zinc etc. are employed for water proofing cement. Translations note).

Alginates and Plastics

Sodium alginate as well as the double alginates of the same with heavy metals or alkaline earths, or the pure heavy metal or alkaline earth alginates are employed. The latter, which are insoluble (except magnesium alginate) are similar to horn when pressed and dried. They may even be embossed and machined. Combinations of alginates with rubber and with gums and resins have been made and described. Algin can be combined with cellulose and pressed, yielding plastic masses of wide application. Practically all such applications are predicated on the fact that the free alginic acid, or the heavy metal alginates produced by double decomposition are insoluble.

P. Gloess has made a study of the industrial applications of the alginates and has published it in the Bulletin of the Institute of Oceanography (France) in January 1919. It is hoped that many of these applications may eventually be established on a commercial basis.

Commercial Results

Let us take a look at actual accomplishments. In Europe commercial manufacture of alginates is carried on in France, England, Norway, Germany and in Bohemia (Czechoslovakia). We might mention the "La Distillerie des Deux Seores" with its plant at Forges d'Aunis; the Société Maritime de Produits Chimiques at Plouescat (Finistère province); the Société Oceana at Saint-Mandé; the Société des Algues Marines at Plougernow; the works at Pleubian, and others in France.

The Société Norgine, a branch of a Hamburg (Germany) company, has been operating at Roscoff ever since 1910. It has treated, or rather collected, in France, about 3000 tons of fresh sea-weeds. The principles of its manufacturing processes comprise the use of

acid or alkaline solutions, to produce alginates of varying purity.

Besides the International Norgine Company, other concerns make alginates. Thus the Chemische Fabrik Norgine, operated by Dr. Victor Stein, at Aussig-on-the-Elbe produces four grades of what we call Norgine (another name for algin), namely:—

Norgine dark (Mark D).

Norgine regular.

Norgine S

and Norgine H (extra).

Of these the first two are dark and contain cellulose and also insoluble calcium and magnesium salts. The two latter are free from these substances. They have the following properties:

Norgine dark D: Viscosity, 3.51%; Ash, 16.62%; Ammonia, 1.25%; Alginic acid, 59.38.

Norgine regular: Viscosity, 3.14; Ash, 14.76; Ammonia, 1.44; Alginic acid, 61.89.

Norgine S: Viscosity, 2.64; Ash, 12.64; Ammonia, 1.19; Alginic acid, 44.78.

Norgine H, extra: Viscosity, 2.15; Ash, 9.34; Ammonia, 1.02; Alginic acid, 42.52.

When soluble salts such as the alkaline alginates are mixed with solutions of heavy metals, insoluble alginates are precipitated; among the most important of these compounds are those of iron and of copper.

The alkaline earth alginates are insoluble (with the exception of magnesium, already referred to), the best known one being that of calcium, which serves principally for the manufacture of plastics.

In Norway, algin and alginic acids are exploited by a number of firms such as the Norsk Tang Syndicate, The Norsk Tangaktiebolaget, and the Tangine Aktieselskab.

American Work

In the United States, particularly during the World War, an extensive study of marine algae was made, and a plant built by the Hercules Powder Co. (at the Pacific Coast) where the main object was the production of potassium chloride, and acetic acid, the latter by the fermenta-

tion of the sea-weeds. A similar process was studied in France during the same period by Darasse and Brangier, but mainly for the production of acetic acid.

Referring again to the use of alginates in the United States, the question arises as to whether this is really a new industry, but we wish to point out that it was quite widely known and used in France at least as early as 1900.

Molded Products

Just as an example of how marine algae (sea-weeds) may be employed directly for the production of molded products, the following comparatively recent patent (U. S. P. 1,603,783) may be mentioned. According to this patent Miss G. C. Loomis and A. L. Kennedy, assignors to Kelp Products Co., of New York, substances containing algin or alginic acid are dried and then finely powdered; then mixed with a small amount of water or a dilute solution of ammonia, whereupon the slightly damp powder is compressed in molds, forming a homogeneous solid body, and which on drying shrinks but little. Various fillers can be added. As a specific example the following is given:

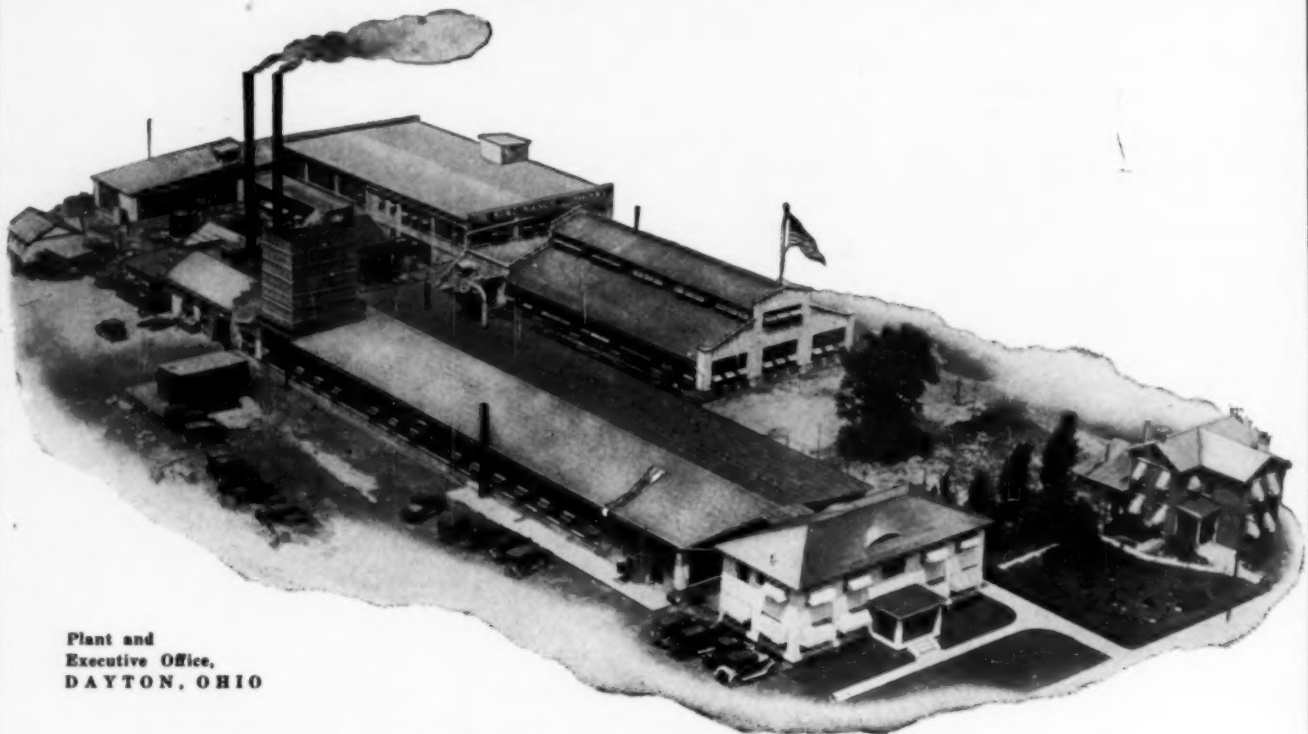
1. Fifteen parts of "Kelp" are dried and pulverized to a fineness of 100 mesh. The resulting fine powder is mixed with 5 parts of a solution of 28% ammonia water and kneaded until the moisture has been uniformly distributed in the powder. The resulting powder contains so little water that it remains dry to the touch and does not adhere together, except when subjected to strong pressure. To mold objects from this powder, it is placed in an appropriate mold and subjected therein to several tons pressure for a few minutes. When removed from the mold a perfectly formed object, strong and homogeneous results. The product is then allowed to lie in the air for a few days until perfectly dry, when it will be found to have great mechanical strength. The

Plastic Moulding Headquarters

Specializing in moulding the new, light-colored materials Beetle and Lumarith

We are one of the four exclusive moulders selected by the Synthetic Plastics Co., an American Cynamid Co., subsidiary, equipped to mould their powder.

CUSTOM MOULDERS OF BAKELITE



Plant and
Executive Office,
DAYTON, OHIO

The reputation of Kurz-Kasch moulding has been established by the unflagging zeal of our organization for the finest results. The best materials, equipment and facilities are available, as well as ideal working conditions.

THE KURZ-KASCH CO.

Dayton, Ohio

MOULDERS OF PLASTICS

BAKELITE AND DUREZ

Moulding service of the better kind including that of making the moulds, in our well equipped tool room, assuring first-class moulded parts from beginning to end—

Please let us quote.

Kuhn & Jacob Machine and Tool Co.

503 Prospect St.

New York Office
747 E. 10th St.
Brooklyn, N. Y.
Phone Mansfield 2010

Trenton, N. J.

Phila. Office
351 N. 57th St.
Phone Sherwood 3577

SERVING THE TERRITORY WEST OF THE ROCKIES

"ACCURACY FIRST"

HARRY W. HAHN Mfg. Co., Ltd.

629 S. San Pedro St., Los Angeles

Pacific Coast Plant
Doehler Die-Casting Co.
World's Largest Producers of
Die-Castings

Custom Molding
Screw Machine
Products

contraction, because of the small amount of liquid used is practically negligible, and not at all to be compared with the large contraction that takes place when wet-molding other similar substances.

2. Fifteen parts of the dried product comprising a copper salt of sea-weeds, obtained by treating the weeds directly with a double salt of copper, or by precipitation of an alkaline salt of the weeds with a copper salt, or drier and ground to 100 mesh powder. The powder is moistened with 5% of a 28% ammonia water and molded under pressure as described in connection with the first example.

The patent cited is merely one example of the many ways in which the abundant supply of seaweeds and the alginic acid derived therefrom may be used in the plastics industry.

Other Industrial Applications of The Alginates

The soluble sodium alginate and ammonium alginates are employed as sizes in the manufacture of various plastics. These products appear on the market in the form of paste, powder or scales. A solution of ammonium alginate as fourteen times the viscosity of starch solution of the same concentration, and thirty seven times that of an equivalent gum arabic solution. While somewhat more expensive than starch, the ammonium alginate is beginning to find an important use in the sizing of fabrics and of paper.

Some attempts are now being made with crude alginates from which the cellulosic debris has not been removed. For some applications this presence of some cellulose may be of no importance, especially if the alginates are to be used as binders for powdered or fibrous material of the general nature of cellulose and the like.

Algin, and alginates have also been applied for pharmaceutical purposes (A recent use is that for mixing with cattle

feed in order to supply the cattle with a natural source of iodine to prevent goitre).

Crude alginates have been successfully applied to the treatment of heavy fabrics such as burlap bags to render the same resistant to acids, such as are encountered when shipping bagged super-phosphate fertilizers. The French plant of M. Bruno and also that of Establishments Saint Freres produce bags impregnated with a form of alginic acid sold under the name of "Alba", which is a crude solution of an alkaline alginate with calcium carbonate. The bags are increased in weight about 200 grams by impregnation with this substance; the impregnation being either carried out on the finished bags or on the fabrics from which they are manufactured. The increase in price of the bags so treated is about 10 per cent.

Other Uses

Sodium alginate is also an excellent defecating agent for the treatment of sugar solutions or for other turbid solutions. One of the particular advantages of sodium alginate is that it will keep sweet and unspoiled for a long time as it is not subject to decay or fermentation. The application of sodium alginate to the defecation of sugar liquors has been studied industrially by Ricard and Boinot at the Distillerie des Deux-Severes, who have patented the process under the trade-name of "Ginal". The general principle of the process is as follows:—

To the sugar solution that is to be purified, or example to the juice pressed from sugar-betts, a solution of sodium alginate is added. After stirring the mixture to obtain a homogeneous distribution of the soluble alginate in the juice, a sufficient amount of an alkaline-earth base, such as calcium, barium or strontium etc., is added, whereby, by mutual decomposition or metathesis, a voluminous insoluble precipitate of the corresponding alkaline-earth alginate is formed in the

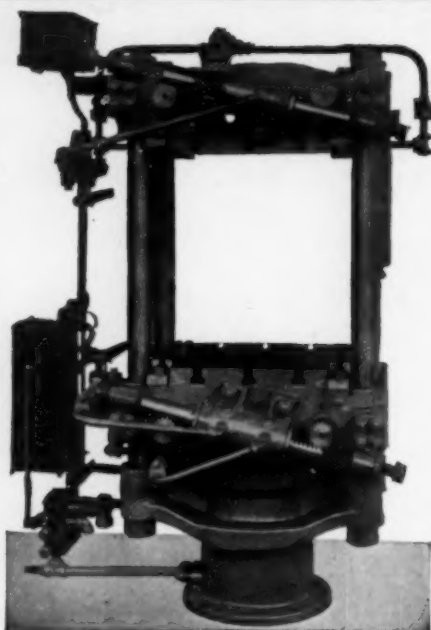
liquid juice. This precipitate is very absorbent and carries down with it all of the colloids and other removable matter from the juice. The solution is then filtered to remove the precipitate; the filtrates being particularly clear and brilliant, and of low viscosity. The amount of alginate required obviously differs with the degree of purity of the juices that are treated therewith.

The great saving in reagents made possible by the above method will be realized when it is considered that ordinarily the purification of sugar-beet juice by the old calcium hydroxide-carbon dioxide method required from 20 to 25 grams of lime per liter, the new method requires but from 2 to 3 grams of sodium alginate and 2 to 3 grams of lime per liter. This represents not only a great saving in lime, but also in the amount of precipitate that has to be handled, and therefore also cuts down the loss of liquor retained by the precipitate. The insoluble precipitate separated from the sugar-beet solutions is not a waste product, as the press-cake can be fed to animals, having considerable feeding value. The process is equally applicable to the purification of apple juice (cider) and for grape-juice.

Paper Products

The author also describes the manufacture of demineralized alginates, and the manufacture of a form of paper from a seaweed known as *Zostera Marina*. This weed is found in abundance on the shores of the Atlantic, both in Europe and America, but does not contain enough alginic acid to make it a commercial source of this chemical. As not related to plastics, we might merely mention this use. The weeds are bleached with hypochlorites to obtain a light-colored fiber.

Other uses of the seaweeds mentioned by our French author is the use of *Fucus vesiculosus* (common bladder-wrack) in pharmacy, (being employed to produce an extract said to be



Semi-Automatic
80 Ton Bakelite Press

Moulding Presses

For all Plastic
Materials

This cut shows one of ten presses with adjustable ejectors on both top and moving platens.

The high and low pressure operating valves are manipulated by an automatic electric valve control, without cams or shafting.

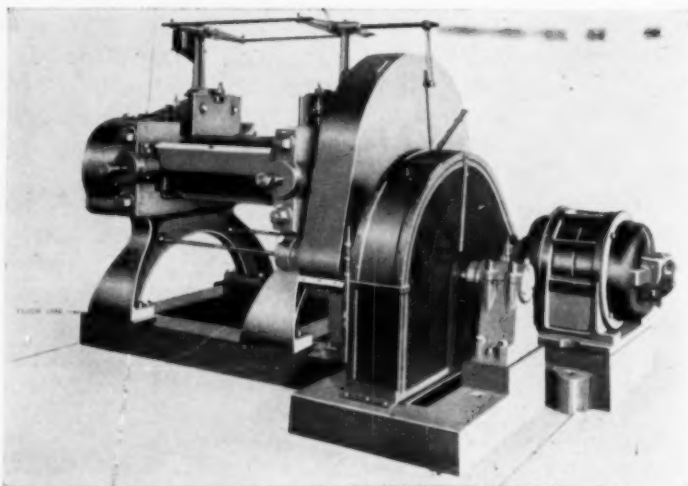
We manufacture hydraulic presses for all hot and cold moulding processes and also complete equipment including hydraulic accumulators, pumps, valves and piping.

Write for our pamphlet—
A new Automatic Control for
Hydraulic Machinery.

R. D. WOOD & CO.
PHILADELPHIA, PA.

Established 1803

Works: Florence, N. J.



14x30 rolls for plastic mixing

Following carried in stock: 6 x 16—10 x 24—
14 x 30—16 x 42. Specially designed for mixing
Durez, Bakelite, Asphalts, and Shellac Compound
materials.

The largest and oldest manufacturers are using
our machines.

WM. R. THROPP & SONS CO.
Established 1888 Trenton, N. J.

Nixonoid

Rods

Sheeting

Tubes

HAVE been standard in pyroxylin fabricating for many years. Nixonoid Sheeting is made in almost unlimited varieties and color effects. New and striking effects are being made in rods and tubing.

NIXONOID quality and service are uniformly dependable. Our representative will be glad to call and help you meet your production requirements.

**NIXON
NITRATION
WORKS**

NIXON, NEW JERSEY

New York Office
320 FIFTH AVENUE
New York City

New England Representative
E. W. WIGGINS & CO., Inc.
Leominster, Mass.

Alginic Acid Applications

(Continued from page 559)

beneficial in certain forms of diabetes: and the manufacture of jellies and deserts from *chondus crispus* (Irish moss). Other sea-weeds that find industrial application on a large scale is agar-agar (from *Gracilaria tichenoides*).

The stems of *laminaria digitata* and *laminaria cloustoni* are dried and form an article of commerce sold by medical supply houses. The greatly shrunken stems of these seaweeds will greatly expand when moistened, and hence they were used for the purpose of dilating hard-to-heal wounds such as fistulae and the like. Certain red seaweeds contain an extractible coloring matter.

A possible future use of certain seaweeds, particularly *Poseidonia australis*, in plastics is predicted by the experiments made by B. Smart and P. Pecover on the nitration of a cellulosic fiber derived from this plant. In France similar experiments have been made, and some nitrocellulose smokeless powder (Poudre B) has actually been manufactured from this source. The weeds are very abundant on the Mediterranean coast of France. In Germany, during the war, the poseidonia fiber was used as a substitute for cotton for the manufacture of cellulose nitrate for smokeless powder and explosives.

As the seaweeds are a good source of both iodine and potash, and as the organic constituents, as above shown, have a commercial value, it may confidently be predicted that a considerable industry will eventually arise in these products.

Notes by the Editor of PLASTICS

In a future article we shall bring to the attention of our readers what has actually been accomplished in the United States in this field. We are aware of the development of a large industry in California based on the utilization of the giant kelp beds near San Diego.

We specialize in MACHINES for CELLULOID, CATALIN and other PLASTIC MATERIALS

Bench Saw Tables

Jig Sawing Machines

Rod Turning Machines
for Beads, etc.

Hand Lever Presses

Gold Inlaying Machines

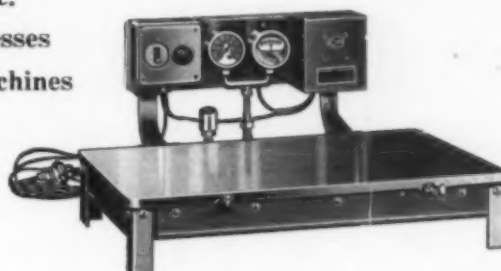
Electric Steam

Heater Tables

Single &
Multiple Spindle
Drilling
Machines

Shaping Machines

Frazing & Engraving Machines



No. 1 Electric Steam Table

Vaporizing Machines — Dies — Tools — Molds — Special Machinery

Full information sent on request.

STANDARD TOOL CO.

75 Water St.

LEOMINSTER

MASS.

SOUTHWARK STANDARD and SPECIAL HYDRAULIC MOLDING PRESSES



Molding Press
with Swing Table

A Press for
every operation.

Specialists in the design of
molding equipment to suit
unusual operations.

BUILDERS OF
Hydraulic Presses for every use,
Pumps Intensifiers, Valves,
Fittings, etc.

Operate your presses with
the HYLO Pumping Unit.

Bulletin 21

SOUTHWARK FOUNDRY and MACHINE CO.

Chicago
Fisher Bldg.

PHILADELPHIA, PA.

Akron
United Bldg.



What is Your Parts Problem

To cut costs or beat competition or both?

In any case Auburn can most likely offer you better prices, or better quality and deliveries which are even more important to you—and an intelligent understanding service you'll appreciate.

Then, too, you may have other parts or uses to which Auburn engineers could help you apply versatile phenolic compounds and pyroxylin plastics advantageously.

In the past, they have been unusually successful.

Would you care to have samples of our work?

Have you something we might figure on?

—or something Auburn engineers might help you with?



Palmite

A new substitute for wood flour, Palmite appears to be of interest from a molding standpoint because it represents certain distinct advantages.

Considerable research work has been done on the application of this material in the molding field, particularly by manufacturers of phenol-condensation compounds and cellulose-acetate materials.

To begin with "Palmite" is more dense than wood flour. Its specific gravity being 1.835 against 1.176 for wood flour. Its maximum water absorption is 4.2% against 17 to 18% of wood flour. This would indicate economy in purchase, also electrical advantage. This material in its most finely divided state is of a fibrous and tenacious nature rather than splintery as wood flour is. This probably accounts for the improved surface appearance and smaller surface leakage when molded as well as the way which it combines with most binders is not doubt due to the fact that the flour is saturated in its natural oil, the oil content being about 4%, this gives it a distinct advantage over other filler material which at the present time cannot explain technically but nevertheless molders have agreed it has.

There is a further advantage in this material for molding in that the charring temperature is from 30 to 50 degrees Fahrenheit higher than that of wood flour. This permits more latitude in the press department than is generally the case.

Molders Meet With Nema

(Continued from page 631)

set for Friday, December 5th, at the Nema offices, 420 Lexington Avenue, New York City. The meeting was then declared adjourned, and although no amusement program had been scheduled for the afternoon, several of the members played golf and were entertained in various ways until train time that evening.

Resinoids in the Printing Art

(Continued from page 651)

fibrous material such as blotting paper and a layer of powdered or sheet condensation product and consolidating in a mold.

E. E. Novotny, 1,398,142, Nov. 22, 1921. Filed Dec. 18, 1919.

Printing Plate Matrix and Method of Making Same

Refers to Patent 1,377,501 in which heavy metallic foil had been used as facing for matrix made of phenolic material or phenolic material in combination with fiber.

In present patent face section consists of a base of chip board or blotting paper impregnated with high percentage of dried phenolic condensation product such as Bakelite, Condensite or Redmanol, coated on both sides with barrier coating consisting of phenolic varnish and lampblack and coated thereover with mixture of condensation product, lampblack and phenolic solid solvent or plasticity oil. Coatings are compacted by pressing against copper sheet between platens of cold press and skin-like surface is produced by pressure and heat. The top coating layer on the impression side of the face blank may be substituted by layer of thin metal foil united with blank by means of layer of phenol-gum and barium sulphate.

Backing consists of plurality of laminations impregnated with dried out condensation product cemented together with a phenolic varnish and coated with a mixture of phenol and lampblack and set by heat and pressure. The facing and the backing may be cemented together or may be applied to matrix maker separately, the union taking place in making the matrix.

In making matrix original body of type is locked in chase, phenolic gum spread on face of matrix and the matrix and type are then pressed together in a press under heat. In casting printing plate the face of the matrix is coated with separating medium consisting of mixture

Our Men Know Their Jobs

A proud boast, but a true one

From our sales engineers thruout our factory organization they have been almost literally born and brought up in this industry.

Call on them to help you.

They can give you many suggestions to make a part better and cheaper molding without sacrificing your objective.

Backed by ample and complete equipment we invite the opportunity to be of service to you.

THE BOONTON MOLDING COMPANY

324 Myrtle Ave., Boonton, N. J.

New York Office, 30 Church St.

**BAKELITE-DUREZ
AND ALL SYNTHETIC RESINS**



New Plastic Products

The laboratories of ARTHUR D. LITTLE, INC., include a special staff for plastic research and engineering and offer services in

the development of new plastics
the technical phases of synthetic resin
production and compounding
the adaptation of plastics to special
industrial uses

Arthur D. Little, Inc.

CHEMISTS ENGINEERS

30 CHARLES RIVER ROAD, CAMBRIDGE, MASSACHUSETTS

CELLULOSE
ACETATE
SODIUM ACETATE
TRIPHENYL PHOSPHATE
DIBUTYL PHTHALATE
DIETHYL PHTHALATE
ACETIC ANHYDRIDE
CRESYLIC ACID

CASEIN — For All
Purposes

American-British Chemical Supplies, Inc.

180 Madison Avenue
New York N. Y.

Ashland 2265



Pioneer Molders of Phenolic Products



Specialists in the
Design and
Execution of
Precision Work



Your Guarantee of Service

**Boonton
Rubber
Manufacturing
Company**



Boonton, N. J.

of soft, fine, graphite and dextrine solution.

E. E. Novotny, 1,398,143, Nov. 22, 1921. Filed Dec. 11, 1919.

Moldable Composite Material and Method for Making Same

Sheets of fibrous material such as long-fibered chipboard, blotting or Yoshino paper impregnated with a minimum amount of Bakelite or Condensite dissolved in alcohol, benzol or acetone is pressed lightly in wringer, heated in vacuum to drive off solvent and dried in oven. Sheets are superposed and united with adhesive such as phenolic cement, vegetable or animal cement. Single or laminated sheet is coated on one or both sides with varnish of condensation product and lamp-black and heated to form a barrier coating and then an outer coating richer in condensation product is superposed and heated to form skin-like coating.

Coatings may contain fillers such as pigments, wood flour, aluminum oxide, barium sulphate or silex. Colored designs may be printed on coatings.

Product may be made in blocks or cylinders and may be made into printing plates.

E. E. Novotny, 1,398,149, Nov. 22, 1921. Filed January 21, 1921.

Method of Molding

A resinoid (phenol-furfural, phenol-formaldehyde or phenol-acetaldehyde condensation product) is ground in ball mill, heated to infusibility, ground again, applied to face of suitable matrix with or without a backing of phenolplastic impregnated fabric, molding pressure applied and article stripped from matrix. Method may be used to reclaim discarded phonograph records, printing plates and other articles made of a resinoid.

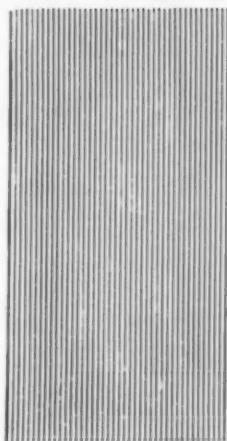
E. E. Novotny, 1,401,633, Dec. 27, 1921. Filed March 15, 1920.

Printing Plate Matrix

Takes blank made as disclosed in Patent 1,370,666, imposes it upon body of type locked in chase; places the assembly into press and heats.

(To be continued)

DOW PHENOL



THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

● Particularly effective in the manufacture of plastics and molded products, due to its paramount uniformity. Our facilities for large volume production insure prompt shipment in any quantity—290 lb. drums to tank car lots. A trial will convince you of its dependable workability. Let us quote on your requirements.

Expert Bakelite Molding Requires Perfect Dies, Modern Equipment, Skilled Labor

RECTO combines these with a knowledge of molding and an understanding of the correct way to apply this knowledge to your product.

"Remember Recto Does It---Better"



Recto Manufacturing Co.
APPLETON STREET CINCINNATI, OHIO

**EXPERIENCE
ORGANIZATION
EQUIPMENT
FINANCIAL RESPONSIBILITY**

Combine to make us a **MOST RELIABLE** source of supply
For Molded Parts

**BAKELITE
DUREZ
BEETLE
LUMARITH**

Custom Molders Since 1908

Northern Industrial Chemical Co.
11 ELKINS ST. SO. BOSTON, MASS.



DIEMOLDING CORPORATION

Molding Service for Plastic Materials

BAKELITE - BEETLE - DUREZ

CANASTOTA, NEW YORK

Some Recent Useful Books

Handbook of Chemistry and Chemical Engineering Catalog Present new Edition

HANDBOOK OF CHEMISTRY AND PHYSICS, Fourteenth Edition, by Charles D. Hodgman and Norbert A. Lange. Chemical Rubber Publishing Co., Cleveland, Ohio. 1930. 1367 pp. \$5.00.

A Review, by Carl Marx,
Editor of PLASTICS.

MODERN industry owes such an enormous debt to Chemistry and Physics, that it may now truly be said that without these two branches of science modern industry could not exist. Every line of manufacturing employs raw materials; and these raw materials, no matter what they may consist of, are the products of chemistry. Chemistry is now an indispensable adjunct to agriculture, manufacture of the basic commodities such as steel and iron, petroleum products, the packing-house industries, glass and ceramics, the electrical industries, combustion engineering, architecture and constructional engineering in general, baking and cooking, laundering, sanitation such as sewage disposal and the safeguarding of municipal water-supplies and countless other industries, among which the rapidly growing plastics industry is by no means the least.

During the past two decades chemistry has established itself as the one indispensable handmaiden of industry and finance. Interest in the subject has even penetrated to the layman; and business men keenly aware of the opportunities provided by improvements in their products have at last recognized that it is the chemist to whom they must turn for advice and assistance.

In our own field, the plastics industry, chemistry plays a most important role, for the basic materials of this industry

are without exception the products of the chemists' inventive and productive skill. Hence any book, such as that now under review, that might well be designated as "The Chemists' Bible", is of more than passing interest to our readers.

A Wealth of Data

While ordinarily "figures" are dry reading, this criticism cannot be directed to the present volume, which in almost 1400 pages presents, in well arranged and splendidly indexed form the indispensable numerical data required in the conduct of any laboratory, large or small. But its usefulness is by no means confined to laboratory chemistry, for this volume provides data in the field of pure and applied physics, not to speak of the very numerous mathematical tables. There is hardly a problem that may arise in the course of almost any executive's busy day that cannot be answered rapidly and authoritatively from this compact well-printed book.

The "Handbook of Chemistry and Physics" is somewhat more than the name implies, for it comprises much additional data not usually found in a book of this type. For example it comprises 160 pages of mathematical data such as the commonly used algebraic and trigonometrical tables, logarithms not only of the numbers but also of the trigonometric functions as well as interest tables and formulae for calculating sinking funds and amortization of equipment;—all required, for example, by a plant executive.

The general chemical tables 637 pages of the properties of elements, compounds and solutions, including a resume of the known properties and history of the known elements; thus form-

ing a good supplement to the dictionary, and obviating the necessity of consulting a large, and perhaps inaccessible textbook. As an example of the completeness of the work it might be mentioned that the list of properties of the inorganic compounds comprises over two thousand of the same, giving such data as molecular weight, crystalline form and color, specific gravity, melting point, boiling point and solubility in water and alcohol etc. The table of organic compounds, which also includes the formulae of the same, contains over three thousand entries, thus constituting about the most complete list of the kind contained in any handbook small enough to be kept within easy reach on the executive's desk.

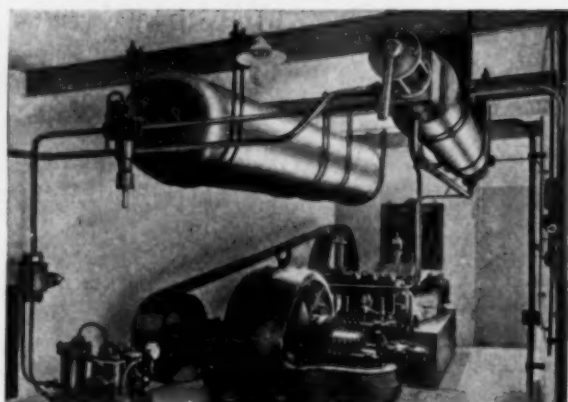
As particularly interesting to those engaged in the fabrication of plastic materials, the 136 pages devoted to the physical properties of various materials are a good example of what may be found in this volume.

Physical Properties of Plastics

Prominent among the tables relating to the physical concepts such as heat, sound, electricity and magnetism, and light, are those dealing with sparking potentials, resistance of dielectrics, coefficients of transparency, and other data frequently required by those in the plastics industry. A very welcome table to the layman is that giving the correct chemical name and formula for a large number of compounds which are known by so-called common names, which differ from the correct chemical designation.

Considerable space is given to ceramic tables, which are usually found only in special text books. For the research chemist there are extensive tables giving the heats of formation and solution and similar data. As perhaps quite pertinent to the properties of metallic inserts in molded products

Quick Change of Pressure Can Be Arranged



When You Install a Compressed Air Ballasted Accumulator

They afford choice of style and location, and maintain constant pressure with less variation than any other hydraulic apparatus.

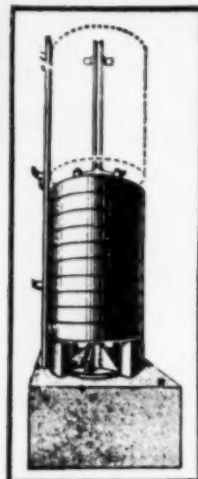
CHARLES F. ELMES ENGINEERING WORKS
1001 Fulton Street, CHICAGO, ILLINOIS

HYDRAULIC MACHINERY
ELMES
CHICAGO

Comparison



Air Ballasted



Weighted

MARBLETTE

A Cast Phenolic Resin

RODS, BLOCKS, TUBES
SPECIAL CASTINGS

Non - inflammable —
Odorless — Tasteless —
Impervious to common
acids—Resistant to water,
oil and alcohol—high
dielectric, compressive
and tensile strength —
specific gravity 1.29—

May be turned—sawed—
drilled—threaded—
embossed—carved—
faceted. Takes an extremely
high finish.

Through the entire
range of colors in plain
or mottled effects —
opaque, translucent or
transparent—from pale
aquamarine to the deepest
jade.

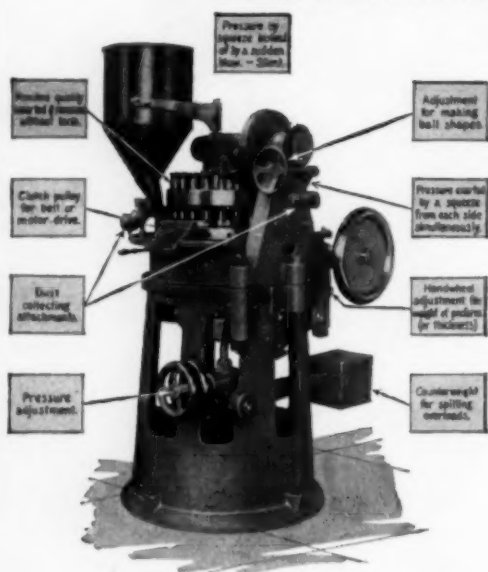
Suitable for shaving brush
handles, cane and umbrella
handles, brush backs, dice,
beads and bracelets, lamps,
toilet seats, hydrofluoric
acid containers, gasoline
gauges, ash trays, salt and
pepper shakers, gear shift
knobs, poker chips, clock
cases, book-ends, knife-handles,
dominoes, percolator
handles, etc.

THE MARBLETTE CORPORATION

37-18 31st Street
LONG ISLAND CITY,
NEW YORK

"Trouble-proof" Production PREFORMING

with the new STOKES Rotary Press



250—300 (or more)
preforms per minute.
Die fill 2" — Diam-
eters up to 1 1/8".
Weight and thickness
of preform easily ad-
justed.

Excess Pressure Release
prevents jammed or
broken presses.

Consult us on your preforming problem

FJS STOKES MACHINE COMPANY



Process Machinery since 1895

5934 Tabor Road

Olney P. O.

Philadelphia, Pa.



are the tables giving the coefficient of thermal expansion of many metals and alloys.

A comparatively novelty is the inclusion of tables giving the sound-absorbing properties of quite a number of modern sound-absorbing plastic compositions, such as are employed in correcting the acoustics of theatres and broad-casting studios. There is also a wealth of data as to the transmission of ultra-violet light through glass and similar transparent materials.

For those who are a little rusty on their understanding of the fundamental physical terms, quantities and units, there are about twelve pages describing the same and indicating their use, and relation to each other. Physical laws and formulae therewith connected occupy an equally prominent place.

A particularly useful part of the Handbook is the well arranged time-saving set of tables for the conversion of the customary weights and measures into the standard metric system; and the tables for the rapid conversion of Fahrenheit temperature scales to Centigrade, and reversely. The work closes with a set of wire-tables, and a chapter on chemical and physical calculations, so that the reader might test his prowess in applying the data liberally furnished in the forward portions of the book.

Radio Data

The radio manufacturer will also find much valuable data, such as tables for the calculation of inductances, capacities and the frequency and wavelengths of combinations of inductance coils with condensers of diverse capacities. Such data was usually only to be found in special works on the subject.

The index is worth mentioning. The writer is aware of many good handbooks of the general nature of the one at present under discussion, which have been more or less spoiled by the failure to index them so that the data may be located

without hunting all over the book. The compilers of the index to the present volume, however, have done a good intelligent job, and the thorough way in which the work is indexed makes it a real pleasure to use it.

Now for a few suggestions: The plastics industry, I am sure, would welcome a compilation of correct data on the properties of the various plastic materials, particularly the resins and cellulose compounds. If the manufacturers of these products would co-operate to supply such data as tensile strength, compression strength, dielectric losses and strength, melting point, optimum curing temperature of resins, etc., this might well form the basis for a set of tables to be included in future editions of this work.

At the price at which the handbook is sold, it is, to use a vernacular expression—"some bargain".

The printing and binding are up to the usual standards. A deluxe edition has flexible covers and is gilt-edged to prevent discoloration of the edges by plant and laboratory fumes.

Chemical Engineering Catalog. 15th Edition published by Chemical Catalog Co., Inc., under the supervision of a committee appointed by the American Institute of Chemical Engineers, American Chemical Society and Society of Chemical Industry. 1168 pages.

THIS encyclopedic reference book of the chemical process industries is making its perennial re-appearance in the plants and laboratories where equipment and materials are of interest. The method of presenting this vast store of data is no different than it has been in previous editions. However, the editors have made a serious endeavor to induce the firms whose products are featured to duplicate, as far as possible, their own catalogs in this master catalog of the entire industry. Thus, the book becomes a collation of engineering sta-

tistics rather than mere advertising.

The index of proprietary names has been enlarged and chemical manufacturers who are not space users have their products listed under the chemical index. This innovation has been effected because of numerous requests from users of the catalog. However, in the Equipment Index, only the products of space users are listed. The Technical and Scientific Books Section has also been revised and brought up to date, titles of volumes appearing since the last issue of the Catalog being included.

The distribution of the Catalog is divided into three classes. The first two classes include Works Managers, Superintendents, Consultants, Chief Chemists of Industrial and Research Laboratories and heads of Chemical Engineering Departments. These may either obtain the Catalog free of charge on the understanding that it will be returned on publication of the next edition or may keep the book permanently on payment of three dollars. A charge of ten dollars per copy is made to those not included in these two classes.

Dr. Dow Dies

DR. Herbert H. Dow, president of The Dow Chemical Company, Midland, Michigan, died suddenly, Wednesday, October 15th. Dr. Dow was generally recognized as one of the five foremost chemists in the country, and was recently nominated for the *Chemical Markets* medal by Henry Ford. The honorary degree of Doctor of Engineering was conferred upon him by Case School of Applied Science in 1924.

The Perkin Medal in chemistry for 1930 was awarded to him early this year. This is the highest award given industrial chemists.

The phenomenal growth of the chemical manufacturing company that bears his name has been due primarily to Dr. Dow's insatiable desire for new developments. Aside from his



Great Concerns Come to Norton for Molded Parts

MANY of the country's most noted concerns come to Norton Laboratories for molded parts used in the products which they manufacture. Among them is the famous name of the Hoover Vacuum Sweeper Company. They use Norton molded handles on their vacuum cleaners.

Norton's vast experience in both the economical design and manufacture of molded parts places them in a most favorable position to serve your molding requirements.

Surely the leaders in their respective industries know what they are doing when they depend upon Norton for their molded parts—then why don't you send your specification sheets to Norton and have them estimate on your molding requirements?

Follow the line of least resistance and cheapest costs to you. Come to Norton—experienced experts in the art of plastic molding.

NORLOC

Norton Laboratories, Inc. LOCKPORT, N. Y.

ROCHESTER, N. Y., O. P. Guthrie, 423 Powers Bldg.
CHICAGO, ILL., Mr. W. M. Craig, 228 North La Salle St.
DETROIT, MICH., W. H. Mark Hanna, 6-247 General Motors Bldg.
BRIDGEPORT, CONN., Mr. J. S. Berthold, 1115 Main St.
HILLSIDE, N. J., Mr. A. C. Hall, 1262 Miriam Place

*Custom Molders of Bakelite, Durez and other Resinous
Plastics*

own untiring efforts he always made it a matter of policy to encourage and support the research and experimental work that has been responsible for so many new developments in the chemical industry. Many of his processes have been generally useful to chemical industry as a whole, and some particularly to the synthetic plastic industry.

Ownership Statement

Statement of ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912 of *Plastics and Molded Products* published monthly at Washington, N. J., for October 1, 1930.

State of New York, County of New York, ss.: Before me, a Notary Public in and for the State and county aforesaid, personally appeared Robert C. Gilmore, who, having been duly sworn according to law, deposes and says that he is the Treasurer of the *Plastics and Molded Products* and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, *Plastics Publications Inc.*, 114 E. 32nd Street, New York City; editor, Carl Marx, 114 E. 32nd Street, New York City; managing Editor, R. C. Gilmore, Jr., 114 E. 32nd Street, New York City; business managers, R. C. Gilmore and R. C. Gilmore, Jr., 114 E. 32nd Street, New York City.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member must be given.) *Plastics Publications Inc.*; R. C. Gilmore, Jr., 114 E. 32nd Street, New York City; R. C. Gilmore, Sr., 114 E. 32nd Street, New York City; Carl Marx, 114 E. 32nd Street, New York City; A. K. Gilmore, 114 E. 32nd Street, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent of total amount of bonds, mortgages, or other securities are: Sylvan Hoffman, 114 E. 32nd Street, New York City.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only).

ROBERT C. GILMORE

Business Manager.

Sworn to and subscribed before me this 7th day of October, 1930.

(SEAL)

JAMES J. DOOLEY.

My commission expires March 30, 1932.

Technical Abstract Section

A Concise Review of Patents and Literature

Cashew Nut Composition. Mortimer T. Harvey, of East Orange, New Jersey assignor to The Harvel Corporation of Newark, New Jersey. U. S. P. 1,771,786; July 29, 1930.

1. Sulphurized cashew nut shell liquid.

2. As a new article of manufacture, material which is the heat reaction product of cashew nut shell liquid and sulphur.

3. The method which comprises heating cashew nut shell liquid together with sulphur and thereby securing a reaction between them.

4. A material, formed by heating cashew nut shell liquid and sulphur and having characteristics of rubber which has been heated with sulphur.

Process for the Preparation of Bodies From Acidyl Celluloses. Emil Hubert, Ludwig Lock, and Otto Leuchs, of Elberfeld, Germany, assignors to I. G. Farbenindustrie A.-G. of Frankfurt, Germany. U. S. P. 1,766,822; June 24, 1930.

Example 1.—20 parts by weight of cellulose acetate are dissolved in 80 parts by weight of acetone or in a mixture of 75 parts by weight of acetone and 5 parts by weight of chlorobenzene. The solution is spun through 0.6 mm. diameter jets at a speed of 20–40 m. into a bath of calcium chloride of 23 per cent strength heated to 40–50°, to which acetone in quantity amounting to about 5 per cent of the bath has been added. Threads of about 2 deniers are thus obtained.

Example 2.—22 parts by weight of cellulose acetate are dissolved in 78 parts by weight of acetone or in a mixture of 73 parts by weight of acetone and 5 parts by weight of chlorobenzene. This solution is spun through jets of 0.4 mm. diameter at a speed of 25 m. into a precipitating bath heated to 40–50°, to which alcohol has been added, as for instance, a bath consisting of 50 parts by weight of a 35–40 per cent calcium chloride solution 30–40 parts by weight of alcohol and acetone in quantity amounting to 5 per cent of the bath.

Process of Treating Fabric With Cellulose. Robert R. Fulton, of Pittsburgh, Pennsylvania, assignor to The Koppers Company. U. S. P. 1,767,663; June 24, 1930.

Ebonite Composition and Method of Producing the Same. Harold Gray, of Akron, Ohio, assignor to The B. F. Goodrich Company. U. S. P. 1,769,506; July 1, 1930.

A process for the preparation of a readily remoldable ebonite compound which comprises mixing comminuted vulcanized hard-rubber with a substantial amount of a substance se-

lected from the group containing oils, waxes, resins, mineral rubbers, factices, wood pitches and glue, and heating the mix at ordinary pressures to form a homogeneous product, the said substance being substantially free from raw gum.

A process for the preparation of an ebonite compound comprising heating 100 parts by weight of comminuted ebonite with 10 or more parts of an organic rubber softener for such time and at such temperature as to produce a homogeneous product, the said rubber softener being substantially free from raw gum.

Method of Preparing Coumarone-Indene Resins. Robert W. Ostermayer, of Pittsburgh, Pennsylvania, assignor to Neville Chemical Company, a Corporation of Pennsylvania. U. S. P. 1,770,281, 1,770,282, 1,770,283; July 8, 1930.

(a) The method herein described of deriving resin from coal tar distillate which comprises preparing a distillate having a coumaroneindene content, polymerizing the coal tar distillate in the presence of a petroleum distillate diluent with the production of precipitates insoluble in the diluent, removing such precipitates, and separating the dissolved resin.

(b) The method herein described of deriving resin from coal tar distillate having a coumaroneindene content, polymerizing the prepared distillate which consists in preparing a distillate having a coumaroneindene content, polymerizing the prepared distillate with the production of incidental precipitates, diluting the polymerized mass with a petroleum distillate lower on the Baumé scale than petroleum benzene in which diluent such precipitates are insoluble, removing such precipitates, and separating the dissolved resin.

(c) The method herein described of deriving resin from coal tar distillate which consists in preparing a distillate having a coumaroneindene content, polymerizing the prepared distillate with the production of incidental precipitates, diluting the polymerized mass with a petroleum distillate higher on the Baumé scale than petroleum benzene in which diluent such precipitates are insoluble, removing such precipitates, and separating the dissolved resins.

Resin-Coated Pulpboard. Harold C. Harvey and Hubert L. Becher, of Trenton, New Jersey, assignors to the Agasote Millboard Company. U. S. P. 1,763,653; June 17, 1930.

As an article of manufacture a warmer base of compressed fibre intermingled with a fusible binder having a relatively low coefficient of expansion, said warped base having firmly attached thereto by a surface

lock a warped layer of insoluble and infusible artificial resin, said layer being thicker in some portions than in others, the thickness of the thicker portions being substantially sufficient to compensate for the warping of the base and the layer.

Method of Molding Articles. James Harvey Tomlin, of Cicero, Illinois, assignor to Western Electric Company, incorporated, of New York, N. Y., V. S. P. 1,764,662; June 17, 1930.

The method of molding plastic material into articles having inserts, which consists in partially forming an article in a mold under heat and pressure, withdrawing the partially formed article, positioning an insert, and compressing the associated material by means of the partially formed article to complete the molding of the article and to enclose the positioned insert under uniform pressure to prevent the flow of the associated material.

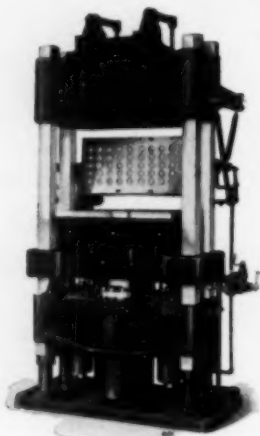
Method of Producing Chemically Stable Articles. Johan Karl Wirth, of Berlin-Wilmersdorf, Germany, V. S. P. 1,767,421. June 24, 1930.

In the manufacture of vessels of phenolic condensation products, of such size that they cannot be practically pressed in a mold, the process of preventing the shrinkage inherent in the unpressed phenolic condensation product, comprising providing a skeleton of metal having suitably spaced interstices, with the edges of which the phenolic condensation product may interlock, spreading a soft plastic mixture of liquid phenolic condensation products with fillers without pressure onto the metal skeleton in such a manner that the interstices become filled with a mixture and the surface becomes coated with it, then hardening the phenolic condensation product by the application of heat, removing the outer skin of the hardened coating, heating the vessel thus treated, to temperatures up to a limit of about 200 degrees C, then applying to the surface a layer of phenolic condensation products and finally hardening the latter.

Artificial Shellac. Arthur W. Burwell, of Niagara Falls, New York, assignor to Alox Chemical Corporation, of New York, N. Y., U. S. P. 1,770,876; July 15, 1930.

A molded article comprising inert filler and a material comprising saponifiable, water-insoluble, petroleum-insoluble hydroxy-carboxylic acids obtained by contacting a free-oxygen containing gas with a petroleum hydrocarbon mixture in liquid state at a reactive temperature of from about 100 degrees C. to about 155 degrees C., and at a pres-

French Hydraulic Machinery



A new tilting die molding machine, (patented). The die or die head tilts mechanically as the platen moves. The only hydraulic cylinders are the pressing and return cylinders. Rigid, accurate, reliable.

Several installations made in large plants.

We build all types of molding presses. Write for catalogs.

The French Oil Mill Machinery Company
Piqua, Ohio

New York

Pittsburgh

Akron

Chicago

Hydraulic Operating Valves

Fig. 1 represents a valve for operating Semi-Automatic Presses for Hot or Cold Molding, using high and low water pressures and Relief, either with or without single or double "Pull-Back" cylinders. The operating lever can be placed in any position shown in Fig. 2.

Made in several sizes for use on large or small presses.

Also Angle, Globe and Pilot Valves of various sizes, Safety Valves, and Eccentric Quick-Opening Valves.

Hydraulic Fittings, Pressure Pumps, Accumulators, Steam Plates, Etc.

Our experience of over fifty years is at your service. Let us help you solve your pressing problems.



Fig. 1

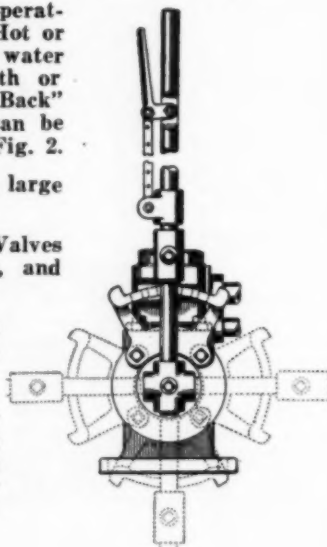


Fig. 2

Established 1872.

The Dunning & Boschert Press Co., Inc.

330 West Water St., Syracuse, N. Y.

sure greater than atmospheric, producing thereby saponifiable, water-insoluble, petroleum-insoluble hydroxy-carboxylic acids, separating the said acids from the reaction mixture, and subjecting the separated acids to vacuum distillation.

Shellaclike Product. Arthur W. Burwell of Niagara Falls, New York, assignor to Alox Chemical Corporation of New York, N. Y., U. S. P. 1,770,875; July 15, 1930.

Process which comprises contacting a free oxygen-containing gas with a normally liquid petroleum distillate having a density of from about 40 degrees to about 36 degrees Baume, in liquid state, at a reactive temperature of from about 100 degrees to about 155 degrees C., and at a pressure of from about 150 to about 350 pounds per square inch, in the presence of an exciter of oxidation, continuing the oxidation treatment until the reaction mixture contains a material amount not substantially in excess of about 35 per cent. of petroleum-insoluble hydroxy-carboxylic compounds, separating the said acid compounds from the said reaction mixture and removing more readily volatilizable products there from.

As a new product a material comprising saponifiable, water-insoluble hydroxy-carboxylic acid compounds insoluble in petroleum and in fatty oils, soluble in carbon tetrachloride and in solvents for natural shellac, which material possesses dielectric properties at least equal to those of natural shellac and when free from all volatilizable compounds is a hard brittle solid, which material is obtainable by contacting a free oxygen-containing gas with a mineral oil product consisting essentially of relatively low molecular weight, normally liquid, aliphatic hydrocarbons, in liquid state, at a reactive temperature of from about 100 degrees to about 155 degrees C., and at a pressure of from about 150 to 350 pounds per square inch in the presence of an exciter of oxidation, continuing the oxidation treatment until the reaction mixture contains a material amount of petroleum-insoluble hydroxy-carboxylic acid compounds and separating the said acid compounds from the reaction mixture.

Process of Spray-Drying Cellulose Acetate Solutions. Cyril J. Staud, of Rochester, New York, assignor to Eastman Kodak Company, of Rochester, New York, U. S. P. 1,762,937; June 10, 1930.

In the process of preparing cellulose acetate, spraying in fine droplets a flowable reaction mixture comprising cellulose acetate, acetic acid and an organic liquid which is miscible therewith and highly volatile, into a desiccating gaseous vehicle which takes up vapors of acetic acid and of said liquid with great rapidity thereby disrupting the particles and converting the spray into a fine powder the particles of which are rough surfaced and highly permeable to liquids.



Materials for the Plastics Industries



COTTON FLOCKS of SUPERIOR QUALITY

We are suppliers to all the leaders in the Plastic Molding Industry.

THEY KNOW QUALITY!

Write for samples and quotations

Claremont Waste Mfg. Co.

CLAREMONT, N. H.

MANUFACTURERS

Do you make or use celluloid items?

Let us quote you on your Pyroxylin parts or your finished item.

Writing us may be quite worth while.

C. J. Bates & Son

CHESTER, CONN.



*Good
Mirrors*

*will guarantee
approval of
your Product*

Standard Mirror Co.

151 - 157 HARRISON STREET

Buffalo

Your Back Copies of Plastics and Molded Products Are Worth Money

We will buy January, February, March and April, 1930, and all copies of 1925 that you may have duplicated or no longer require. Send us a list and we will give you our prices for your lot.

Reply to Desk B

PLASTIC PUBLICATIONS, Inc.

114 East 32nd Street

New York City

And Now, In Closing:

THERE weren't so many members at the last Molders meeting . . . which may mean a flock of busy presses . . . but then, there weren't many non-members there either, and we speak for ourselves . . . For our reaction to business see the following paragraphs . . . Pouvail-Smith auctions off their molding equipment . . . More cut prices the result? . . . Nixon Nitration Works buy a Spartan biplane and fly 3,000 miles through the west on sales . . . Carl Williams is pilot, but Mabry is being groomed for the job . . . Grotelite pops up again at the house of Atwater Kent . . . Childs, head of Beetle, is in London on a business trip, returning early in November . . . and, just to be competitive, Williams, of Luxite, is permanently at 101 Park Avenue, New York . . . The New York "Times", Sunday, September 28th, quotes a dream of the African explorer, Paul Hoeffler . . . dreaming that melted celluloid poured out of a can . . . That's a nightmare . . . Kuttroff-Pickhard is in liquidation . . . Thanks, if any, to Washington, D. C. . . . Leroy Fairman is writing an article on plastic, molded products for the *American Perfumer*.

IN response to the plea "Now is the time for all good men to come to the aid of the Republican Party", some staggering predictions have recently appeared in the daily papers. Not the least of these is Charles M. Schwab's "Unparalleled prosperity is just around the corner". How many people, we wonder, are thus misled? It may be unparalleled for Mr. Schwab, but he isn't in the molding business, or the pyroxylin. As a matter of fact, he isn't even a headline, which

needs more than prosperity. No sane man can doubt the fact that stock market depression is intensified by powerful opposing political factions, but the truth of values and profits in any industry is usually more evident to its executives than to politicians or outsiders. Which brings us to the fact that the truth of this industry is that it is better than at any time this year, that it will probably continue to gain, and that larger orders and steadier profit are resulting from the studied economies of the past ten months. But that does not mean, even for those that can be driven there in private cars, that "unparalleled prosperity is just around the corner". It means there is hope.

IF anyone ever deserved concerted praise for his efforts it is C. A. Kurz, Jr., who is the retiring Chairman of the Molded Insulation Section of Nema. Against the history of former failures, against the individual attempts to disparage and break down, he did a reconstruction job worthy of the best. It was a part time job in action, for his own large business must have required more than usual attention, but it was a full time job in responsibility and thought, requiring sometimes unusual diplomacy and careful handling and other times firm standards of procedure. He retires with the thanks of all who have worked with him and with a deeper personal regard for his abilities and services on the part of all who know him.

THESE are the days of rapid sale, purchase and failure. At least, that is what we are given to understand. Talking with Williams Haynes in a friendly confab the other day—

and by-the-way, Haynes' "Chemical Markets" has just awarded the Medal mentioned in August Plastics to Pierre S. du Pont—the talk swung around to losses in publishing and the known fact that there are plenty of publications ready to be sold. "Make us an offer", was our parting reply as we went out the door; "Sue me", came Haynes' voice as we closed it. And there is the history of the times in six words.

FOR some unaccountable reason we find ourselves with a few dollars in our pocket. Not much, it is true, but enough to purchase a one way ticket to Bridgeport and have enough left over for the gas bill. In what is assumed to be one of our sane moments we are willing to donate a part of it—mind you, only part—to the man who solves the riddle of "who molds caps for American Beauty, and why". Take it or leave it alone.

FORTUNATELY, we suppose, there were no kicks and abuses about our change in form and make-up which continues this month. To those who had over-estimated our ideas we want to say, and, as a matter of fact do say, that many of the best features are yet to come, not a few of which will be in the December issue. Yet anyone can see that these changes are self-supporting, that we don't care to copy the style of any other publication, nor to have them copy us, and that sooner or later other people will wake up to the fact that we were the first, and are still the only, publication in the world exclusively devoted to this industry. And that goes also for the four annual editions of our Guide-book.